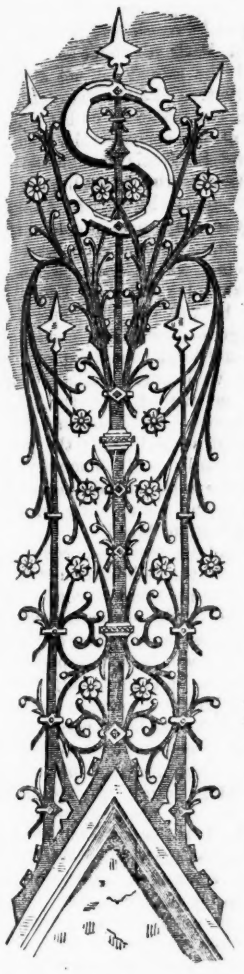
The Builder.

VOL. XX.—No. 1022.

Heating and Cooking Apparatus in "the Exhibition."



SOMETIME before the opening of the Exhibition, as our readers may recollect, suggestions were published as to a comparative study of the appliances for heating, expected to be displayed by different nations, contrivances wherein it was believed English architects, and manufacturers, had much to learn. Considering the attention that has been lately given, in certain continental cities, to improvement in the forms of grates, and the results therefrom in economy of fuel and diminution of smoke; and, considering also, what we are quite prepared to show, that the practice of French cookery in English families, would help to ameliorate the condition, especially, of the poor, we regret that there is scarcely an approach in the Exhibition, to the display, in number or kind, of the contrivances by which the study and comparison could be made; and that there are similarly wanting, stated results of experiments; though the English "Iron and General Hardware" Class, especially in appliances such as are large and costly, is sufficiently furnished.

The heating and cooking apparatus that is to be found in the French division, follows the universal disorder of the Exhibition, turning up in two or three places. We have no intention here, as to the French contrivances, to do much more than mention the very few in number, which we have found at South Kensington; but we have, on the Continent, made many notes which may be applicable to the pursuit of the subjects we have referred to, at some future time. When we tell our readers that the heads of one of the principal houses for articles of the more portable kind, in Paris, do not desire to give information,—even as to what they make, and what prices they ask,—saying, absurdly, that publicity is injurious to them rather than beneficial, an idea may be had of the difficulty which too often in France, is thrown in the way of a right appreciation of French industry and of the French people.

As regards heating, the arrangements in French apartments, till lately, seem to have been very simple; and indeed at present, anything more than a chimney-recess and fire-dogs would be the exception. Wood may be regarded still, as the ordinary fuel for heating, in Paris, and charcoal for cooking. If the Belgian coal be used with the wood, and the logs be of the proper size; if the ashes be not cleared away often; and if the materials be properly built on the hearth, as by a French *garçon*, the cost of a winter-evening's warmth is much less than would be supposed by occasional travellers; and the fire will remain for a surprising length of time, sufficiently alight to kindle a fresh log placed upon it. The arrangement next most general to that of the fire on the hearth is that of the Swedish, or some other, form of stove, showing porcelain case, and porcelain-inclosed smoke pipe. In the fire-places that are least different from the English, the aim seems to be to heat the room by air disseminated by apertures at the sides of the chimney-piece, "*bouches de chaleur*,"—indeed, as in some English forms of fire-place,—rather than by direct radiation; but the basket which contains the burning coal (or rather coke; though sometimes even wood is used in such grates), and is covered in by wire gauze at top, has little resemblance to the wide grate of English houses. The chimney-pieces project far into the room, whilst the flues are carried in the thickness of the wall, rather than in a projecting breast; and the whole decorative framework is now frequently formed of iron, along with the receptacle for the fire, whether resembling most a fire-place with chimney-piece, or a simple stove. Both of the French forms just referred to, may be found, of enamelled iron, in the recesses of the French Court. The basket-grates, as we have called them, and the *calorifères*, are in fact designed for use of coke. In the English fire-place, every contrivance by splayed and polished sides, and shining hearths, is resorted to, for reflection of the brightness of the visible fire; and the front of the grate is brought as much as possible in advance of a portion of the splays: in the French grate, the preference appears to be given to heating the air of the room by conduction, in the manner described. The open-fire stoves combine the two systems, and are indeed in use in both countries.

One of the forms of French heating-apparatus in the Exhibition, is that shown by Mr. J. B. Fondet, of the Maison du Pont de Fer, Boulevard Poissonnière, Paris, and called "appareil à air chaud à tubes prismatiques," which is specially designed for the fire-places above spoken of, "cheminées à bouches de chaleur," but such as have the fuel on the hearth. The arrangement of a current of air from the external atmosphere, through tubes at the back of the fire and heated by it, is a very old one in England, and one which has been lately revived, the tubes, or substituted chamber at the back of the grate, being now formed of fire-clay. As the success of such heating-apparatus depends much on details, the attention of manufacturers may be usefully directed to the article made by the Maison du Pont de Fer. It consists of three or four rows of square, diagonally-set, iron tubes, a connecting chamber at the base, and a cylinder disposed horizontally at the top, the ends of which last are adjusted to the pipes leading to the before-mentioned openings at the sides of the chimney-piece for the escape of heated air. The apparatus is set so as to cover an opening in the hearth, at the back, which gives admission to fresh air, and also to lean forwards, leaving a space of 5 to 6 centimètres between its horizontal cylinder and the back of the decorative splayed-linings of the chimney-opening. The heat of the fire, and the smoke, are drawn by the draught of the chimney, in zigzag course, through the spaces between the tubes, the flame however not getting beyond the first rank, and so not endangering fire in the chimney; and the tubes being thus heated, a current passes through them and into the cylinder, whence it passes into the room. The shape and position of the tubes permit of their being easily cleaned externally, with a long blade of iron, perhaps an old knife. It is pointed out that, for good ventilation, the total area of the channels supplying fresh air, and the "bouches de chaleur," should be in excess of the space between the cylinder and the linings, which is that by which vitiated air from the room has to find escape. We can just now, only state that several forms of stove of another kind, mentioned, may be found in the foreign courts on the north side of the building; though the porcelain covering in them, is more rudely ornamented than the similar portion of the stoves in French apartments and *cafés*. From the articles exhibited by Messrs. Bricard & Gauthier, of Paris, we get one useful suggestion, that of a safety screen, for a fire-place, in the form of a roller-blind, the material being brass-wire gauze.

It is not our purpose in this place, to consider the works in the Iron and General Hardware Class in their decorative aspects; though the subject would be a tempting one. Let it suffice for the moment to say that the Coalbrookdale Company; Messrs. Baily & Sons, Benham & Sons, Feetham & Co., and Edwards and Son, of London; Messrs. Yates, Haywood, & Drabble, of Rotherham; Mr. H. E. Hoole, of Sheffield, and some others, would have claims to be spoken of for the healthy and progressive character of the art which there is in their grates and fire-places. Indeed the particular merit which we have ascribed to French art, of utilizing different materials and processes in combination, for reciprocity of effect, also is very characteristic of the productions emanating from such firms as we have referred to. Neither is it our purpose to treat of the whole of the works in the Class 31, even in their utilitarian aspects. We may merely mention that this class of the British Division of the Exhibition, includes about 300 exhibitors of "Iron Manufactures," 86 exhibitors of "Manufactures in Brass and Copper," and 21 of "Manufactures in Tin, Lead, Zinc, Pewter and General Braziery;" and that a single line in the catalogue frequently is the title for scores of articles.

We set out with the idea of noticing inventions, or variations of arrangement, in grates or other appliances for heating and cooking. Few of the exhibitors we may have to name, exhibit solely manufactures of these two kinds. Heating apparatus, some of which has been named in a preceding article, also will be found in Class 10.

Messrs. Baily & Sons' grates, in "the trophy" in the south-east transept, are examples of the advanced position of the front of the grate with reference to a portion of the splays, the latter here being covered with porcelain slabs, and of the addition of the valved opening, in the back of the grate, above the fuel, which is in addition to the opening corresponding with the old register-door, joined with it; so that the smoke flue might be closed in summer, as it is with questionable advantage sometimes,—considering use of the channel where, as often in bed-rooms, there is no other ventilation. Messrs. Baily's chimney-pieces and other accessories of their grates are examples of the good combination of materials which we have spoken of. Messrs. Benham & Sons, in the same "trophy," have a large "dog-stove" grate, set in a deep-recess of which the whole sides and back are covered with glazed tiles fixed in steel frame-work; and of which the hearth, fenced in by a low stone fender, would also be tiled. Here, the radiation of heat, and prominence of the open fire in the field of view, as before, are main aims when designing the grate. The general principle as to the grate and splays, is equally observable in Messrs. Feetham's works, some of them very remarkable for the ornamentation, which is almost entirely in iron; and in Messrs. Hart's small grate, the brass-work prickly ornamentation of which, however, as difficult to keep clean, and liable to catch any crinoline-distended dress happening to brush past it, is in character with the defects which are observable in their works along with great excellence of manufacture and ingenuity in processes and in combination of them. Supposing there be means of ventilating the room, without the chimney-opening, one of the works exhibited by the Coalbrookdale Company has claims to notice. The grate being of the "dog-stove" kind, or other

pattern that would be movable, the back of the recess is formed semicircular, or segmental, and niche-headed, and is suitably decorated to serve as back-ground. A vase of flowers in summer may then be placed to stand in the recess. There is a form of grate exhibited by the same company (Young's Patent) which deserves particular notice. The coal is supplied to the lower part of the grate, which, above a movable ash-pit, and in rear of a plinth, is formed as a basket; whilst the plinth, in plan and profile, corresponds with the projection of the splays or covings, with which the upper bars of the grate, in the centre or place of greatest projection of their segmental form on plan, also nearly coincide. Thus there is a spandrel-space, on each side of the grate, on the top surface of the plinth. This top is removable; when there is disclosed in each angle, the end of a horizontally-placed Archimedean screw, with thread inclined one side of the grate, right, and the other side left, and to be turned very easily by a ratchet and ornamental lever. The coal is put in at the spandrel spaces; and the screw, being turned, raises up the burning embers, and deposits the fresh coal in the place. There are various modifications of this system in the Exhibition; some of them are applied to kitchen-grates. In the Coalbrookdale Company's kitchen-grate, there is a hopper or tray, the width of the grate in front; the screw working therein. Mr. Hoole exhibits a grate which may be intended as a smoke-consuming one, though we find only that the visible part of the grate stands upon an ornamentally perforated *zocle* behind which is the movable ash-pit and the lower part, and that the bottom can be wound up by turning a handle. Messrs. Ritchie, Watson, & Co., of the Etna Foundry, Glasgow, exhibit a grate of which the principle is partly explained by the lines affixed to it:—

"Atte bak, have recesses, fvze cole into coake
In front, ye brite fyere without any smoake."
OVLD FRANKE HYS ADVICE.

As regards smoke that may not have been burnt, there is more difficulty than there should be about the form of the throat of a flue, in the view of preventing the return of smoke. Messrs. Edwards & Son, in Class 10, contrast three modes of forming the flue in commencing from the grate. They exhibit a section showing the common way of leaving the brickwork on fixing the grate, namely with a pocket or shelf, each side, where soot may rest; secondly, they show the lower part of a chimney "carefully contracted," where brickwork, added as splays, avoiding the evil of the soot, makes the throat somewhat of a diamond form; and thirdly, their patent chimney-bar, with register-door, in which case the flue starts as near as possible straight. Their ventilating hearth-plate has claims to attention. Mr. Jennings manufactures an article, to be used with his flue-pipes, a chamber about 2 feet in height, where the smoke may expand between the register-door and beginning of the flue-pipe; in which invention, the idea of the necessities of the smoke-conduction seems to correspond with that of the second illustration named above. A French inventor, of whose works we may have to speak, argues that the smoke should be kept to the narrow and direct course. Would it not be possible to build stacks of flues with glass one side, and desirable at some cost, for the sake of experiments under all conditions? To this subject of smoke-prevention as well as that of heating, we shall have to return in connexion with the Exhibition.

Of cooking apparatus, we have not found a single specimen of the very cheap contrivances which are used by the poorer classes in Paris, obliged to live in small apartments. We know a court leading out of the Rue du Dragon, occupied chiefly by dealers in cheap stoves and articles belonging to the *batterie de cuisine*, which should be visited by every one taking interest in the question of metropolitan *logements*, and only for the sake of seeing how, by a slight change from the English system, good cookery, with variety in food, can be made within the reach of any working man's wife who would please to try whether that way of ministering to a natural demand, is not better than the drinking way that is left substituted. People who are not capable of serious thought, may choose to smile; but we believe that want of skill, and of practical chemistry, in cookery, have much to do with the taste which foreigners regard as characteristic of our nation,—and so regard with reason, we cannot deny, more than we can the vice, crime, and insanity, which are proved to be caused by the intemperance. Moreover, those who smile at the recommendation of French cookery for the very poor, may not know what that cookery is. French cookery is simply the variety; the preparation of *small pieces* of meat, of inferior quality perhaps, so as to be palatable; the getting full nutriment out of the meat by the manner of cooking; and the utilization of every scrap or bone for soup or sauce. Has any inhabitant of a sea-port, as Whitby or Scarborough, thought of the waste of nutritious substance which goes on, in the form of heads and bones of fish, cast daily on the beach? A good French *ménagère* will provide in fact, and as we have said in speaking of French *appartements*, soup, three courses, and a dessert, with the aid of a little nest of charcoal stoves, which is not larger than the smallest dressing-table, or may be 2 feet by 1 foot on the top. It stands on four legs, so that it may be set almost anywhere; though it is well to place the contrivance under the hood with flue, which is generally built in some corner ready for it. The space of the top, not occupied by the little stove gratings, or *fourneaux*, is covered with glazed tiles. Much smaller and more portable contrivances even than these may be had, better and cheaper than any we are acquainted with as manufactured in England. We tried to induce makers of these latter portable articles as well the others, to send specimens to the Exhibition. It was, however, not considered worth while to send either; and the French authorities, doubtless having their attention kept to more demonstrative things, have not supplied the omission, as we consider it. That there are many things familiar to one nation, which other nations want, ought to be now a truism; and cheap appliances which may help to render the poorer classes more comfortable, are about the most important objects that could be shown in an international collection of works and products which are brought together purely for the object of progress. More durable contrivances than those we have referred to, and wholly of iron, whilst some of them better adapted for roasting, may be had in Paris for from 30 francs (1*l.* 4s.) upwards. The cheaper kind measuring 54 by 33 centimètres on the top, may have an oven, and two apertures at top, for boiling or stewing. With those *cuisinières* which measure 1 mètre 26 centimètres by 65 centimètres on the top, and which have two large ovens, a small fire between them, and three large and three small apertures for pans, besides a boiler holding 25 *litres*, the manufacturers say a dinner can be prepared for fifty persons, with great economy of fuel; and they sell similar *fourneaux de cuisine* slightly smaller, and with a roasting-grate, for 160 francs, and half the size for about 80 francs (3*l.* 4s.). The English cottagers' stoves, at about the same price, but requiring to be set in brickwork, are, though larger, not so well devised for convenience in cooking and for variety in food. The so-called American emigrant's stove, of which there are several in the British Division, is a superior thing, allowing of roasting, baking, boiling, and steaming by one small fire. It must however be better adapted for open-air than for kitchen use, having the objection, which indeed may be made to French and Belgian forms, when English coal is used, that of making a kitchen too hot.

Economy in cooking on the scale required for a *restaurant* of the largest kind, is the characteristic of the thirteen or fourteen places established by Mr. Duval, in Paris, and called "bouillons." A plan of the earliest constructed of these, may be found somewhere in the Exhibition, exhibited by Mr. Touaillon, of Paris, who contrived the fittings. From a report by Mr. Payen, of the Conservatoire des Arts et Métiers, we find that the establishment in the Rue Montesquieu was designed in the Exhibition year 1855, for the nourishment with *bouillons* and *rotis*, of from 6,000 to 10,000 persons *per diem*, many of them coming at uncertain hours. In effect, now, great variety of food is obtainable. It was necessary to divide the apparatus as much as possible, in order that the soup or meat might be always cooked to the requisite degree; and the proprietor wished that the operations should proceed in sight of his guests. Discarding the idea of separate fire-places; since there would have been sixty-eight of them, and dropping fat would have caused stench; and the companies refusing to supply gas in the day; steam was resorted to. A boiler of four-horse power supplied the steam for the boiling-vessels, sixty-eight, each containing forty to seventy *litres*. The steam was introduced by copper pipes into the cavity of the double bottom of each boiling-vessel; and the condensed water returned by other pipes to the boiler. The ebullition, necessary for the production of good soup, was regulated by turning what seems to have been a three-way cock. In some farm-houses, in Yorkshire, we may mention, meat is boiled, at least cooked, *in* steam. The "roast"-meat, in the Paris establishment, was cooked in an oven heated by the same fuel as that which produced the steam. The cost of fuel, coke, was between 16s. and 17s. a day. The ground-floor and galleries, had 100 tables, affording seats for 600 persons. Each table had a fixed syphon, which, on turning the cock, supplied *eau-de-seltz*, produced and raised by a pumping apparatus, in the cellars below, set in motion by a steam-engine. The establishment in the Rue Montesquieu is still flourishing, as are the others, which are on the same general principle. Altogether, these *établissements de bouillon* must be considered invaluable to those inhabitants of Paris who have small incomes. Something of the same kind, not dingy and repulsive, but attractive like the well-lighted and mirrored rooms on the first-floor of the large branch establishment at the corner of the Boulevards de Sebastopol and St. Denis, though better ventilated, should certainly exist in each quarter of London. Who will supply the want? At the place last mentioned, you may meet people of all classes, who mix together with a good bearing towards one another, which we confess, to us seems charming, and as an example; and every Englishman, who would not be put out of temper by ignorance of the language, or of the names of French dishes, and would learn something of the people, will find it as well worth while to dine at the *établissement* just named, as at the Trois Frères or the Maison Dorée. Mr. Touaillon is the exhibitor of machinery of several kinds, the chief of it however for corn-mills. His flour-drying stove, which has come into use since 1860, deserves the attention of those who have taken up the question of pure and nutritious bread.

We have examined in detail two stoves or cooking-ranges of French make, in the Exhibition: one of them is in the gallery next Cromwell-road; the other is in front of one of the northern recesses within the court, where there may be two or three more. The larger stove would be adapted for a family of some position, and numbering many persons; though still larger apparatus on the same principle is made: the smaller range may be compared by aid of our preceding description with the larger sizes of the French portable iron stoves; though these non-exhibited articles are less costly than the exhibited one in the Cromwell-road gallery, to be described below. Manufacturers and others may however gather from us the means of comparison between what suits families of the middle class in one country and the other.

Roasting being the principal operation in English cookery, and the result being best when the pieces of meat are large, it follows that the cooking-range for any family having means to purchase a "joint," should be designed recognizing this as the leading matter for attention. In French cookery, wherein every scrap contributes to what will be nutritious or palatable, but wherein the system allows everything to be done in small space, the apparatus may be different, whilst the cookery will be best adapted for those whose circumstances oblige them to be content with inferior meat. The best cooks distinguish between the operations of roasting and baking; and in every kitchen such as that of a London establishment where good cookery is a consideration, say the kitchen of the Reform Club, the roasting is provided for by a special fire; the meat is cooked, turning, in front of it; and a joint done in an oven would not be considered as roasted. Some cooks who use the oven for joints, consider it very objectionable for game. To many persons, it may appear that all this required no explanation. Yet it is necessary that the distinction between roasting, and cooking in an oven, should be accepted or rejected, as upon it the whole question of design of a cooking-range for English use, and appreciation of the merits of articles exhibited in Class 31, may be said to hang. In recent English inventions, it has been an object to economize fuel as much as possible, by diminishing the front of the fire to a width that is sometimes insufficient for roasting a large joint, and substituting ovens called "roasters;" and to provide, all heated from the same fire, a large surface of "hot-plate," besides ordinary ovens, and perhaps an additional boiler for the production of steam, or for the supply of hot-water to baths. An adequate quantity of heat is communicated to parts of the range, at the farthest distance from the fire, by the disposition of smoke-ducts; which are led, circulating round the ovens, and between them and the hot-plate, to the brick upright flue or flues, in a very ingenious manner; soot-doors being provided in many places for the cleansing, which is very frequently needed; and dampers

being adjusted to the flue of each division of the apparatus, which joins the main flue, to allow of such division being worked separately. The recognized disadvantages of a close oven are provided against, or as supposed, by apertures, one below the oven door, and the other near the top of the oven, generally at the back to allow of a current from the external air into the flue; and sometimes there is a spit, or arrangement of shelves, turning, for the meat, in the oven. The main flue passes straight up from the back of the fire, covered on the face by a metal plate, which should be easily removable for cleaning; and the ordinary opening of the chimney, no longer needed for the smoke, since the fire itself is covered over by its portion of "hot-plate," is ceiled in with plate-iron; a door however, being provided, to be opened occasionally for escape of smoke or steam, or for ventilation of the kitchen. Such, we believe, is a pretty fair account of the principle and general arrangement of the contrivance called "kitchener," as it is exhibited by numerous makers. Some exhibitors of cooking-ranges, however, retaining the term which we have above treated as distinctive, give a much larger space than we have spoken of, to the front of the fire, and avoid having a hot-plate in that part of the range, substituting a projecting hood to catch and conduct the rising smoke. In these modified *kitcheners*, economy of heat is not disregarded, and hot-plates above the ovens are retained; albeit, there might be danger of soot and dust at the sides. The objection to the "kitchener," of course, is the trouble in sweeping, the rapid wear of the apparatus from a fire which resembles that of a furnace, and the general results of inevitable neglect of servants: besides, the so-called "roasters," if not cleaned of dripping, that will fall by carelessness, may communicate bad flavour to the meat. The reply of the manufacturers would be that the attention needed is not considerable, or should be exacted; that the idea of roasting before the fire is mainly a prejudice; that the wear and tear of the apparatus is caused by leaving dampers open when their flues are not required; and finally that in the *kitcheners* small coal can be consumed that would be useless otherwise. On the other hand, we are assured that some families have found that owing to the fierceness of the fire, there was no economy in coal; and, from the great heat in the kitchen, they have discarded "kitcheners" for other, and perhaps long-since invented, apparatus. A French cook working with a modern English range, will sometimes mix earth with the coal.

In the French contrivances on the other hand, whatever importance in the *cuisine*, and dinner, may be attached to the *rotis*, there is a compartment arranged as a grate for roasting in front of the fire, *à la broche;* and the same appliance is a feature of the American Emigrants' stoves, which are the nearest things we have to the portable stoves (those made wholly of iron, we mean, whilst small) of the French makers.

English cooking arrangements, such as are devised specially with a view to economy of fuel, always consist of a "range" under one chimney-opening; or at most they include, outside, a steaming apparatus; and say the French, (though erroneously as we have shown, regarding the most recent contrivances,) there is danger of spoiling the dinner by soot falling. The French contrivance, shunning the calamity so much to be avoided by every cook not inclined to become "a sert of fury," and nearest in principle to the before-named emigrants' stoves, is often like a great iron-dresser, projecting far into the kitchen, or is in the centre of it. Numerous operations go on with a small fire at a corner; the smoke, if to be so called, escaping at the farthest opposite corner, or descending by a very small flue.

The manufacturers at Leamington, Luton, and elsewhere, have given so much attention to "kitcheners;" and the Sheffield, Rotherham, Newark, and Glasgow makers, with those of other towns, are so favourably represented by their particular arrangements, that our remarks had better be taken as suggestive of examination, than *critical* in the common and most erroneous sense of that unfortunate adjective. But the convenience of a form approachable on three sides, seems worth considering.

Mr. Aureliani, of the Rue Richer, Paris, is the exhibitor of the "*foyer économique*" in the Cromwell-road Gallery. On the top, or hot-plate, is one of the ovens with sloping front and valved opening into the flue, peculiar to French cooking apparatus; and in the plate are three large apertures (with lids and rings) for boiling, one of them furnished with an apparatus for coffee-roasting, and one smaller aperture, and a *bain-marie* with two copper vessels for sauces; in front are ovens and hot closets; and at the angle is the place for fuel (which is put in at the top) with two fronts of bars for roasting, the larger place as usual, at the end. The whole is provided for 625 francs (25*l.*); and very little space is taken up by it. The large *fourneau de cuisine* is exhibited by Messrs. F. Baudon & Son, of Paris. We must leave to cooks, the further question between the French and English apparatus. We only observe that the means of roasting are provided by the former, better than they appear to be in the kitcheners, unless we are to consider meat cooked in an oven as the same as that done *before* the fire. The reason the *rotis* in France are not equal to the roast joints in England, lies chiefly in the inferiority of the meat. In the arrangement of kitchen fittings, as shown by Messrs. Benham & Sons (or as well as they could manage in their space), in such arrangement as that of their work at the Reform Club, and in the smaller description of apparatus proposed by them for country mansions and London houses; in the fittings of Messrs. Feetham & Co., Jeakes & Co., Adams & Co., all of London, and some others, a large open fire, distinct from the hot-plates, is treated as a requisite; and, although the range may include oven and boiler heated by the one fire,—and a supply of hot water can be furnished to a bath, as well as steam to a hot-closet and kettles,—broiling and stewing stoves are separate, charcoal or gas being used for them. Messrs. Benham say that ovens with a separate furnace underneath, are preferred by many cooks, to those which are heated by the fire of a kitchen range. Messrs. Benham's apparatus, recently placed in the New Royal Infirmary, Woolwich, and which is the French system with numerous additions and improvements, seems to be the perfection of an arrangement where economy in cooking for a large number of persons is a main consideration. The apparatus boils, roasts, stews, broils, bakes, and steams for 500 persons, and furnishes hot water to baths and lavatories, with a single fire burning about 200 pounds of coal *per day*. The baking includes that of bread. Apparatus on this plan has been fitted at the Royal Medical Benevolent College, Epsom, and at many barracks and workhouses.

Messrs. Brown & Green, of Luton, exhibit one of the best arrangements of the "kitchener," or long range of ovens under one chimney opening, with the heat afforded by a single small fire in the centre. Their principal range is, or rather was (space as asked for not having been obtained), 18 feet in length, and in depth only that of the fire-place, 14 inches. There are two steam boilers, forming the sides of the fire, and a hot-water boiler at the back. The 18-feet length includes six ovens, two of them called roasters. It has been found by experiment that the ovens and boilers could be all completely heated in a space of time varying from 35 minutes to 70 minutes, according to the position with reference to the fire; water in a vessel placed on the sliding cover of the hot-plate over the fire, being boiled in seven minutes, and on the farthest oven in thirty-eight minutes. The report of the Instructor of Cookery to the army, in continuation, stating the capabilities of the apparatus, makes it appear that the range will cook for 2,136 men, with a consumption of three-fifths of an ounce of coal per head. The improvement patented appears to be the arrangement of the ovens, distant from the fire, and that for conducting the heat round them by the smoke-ducts; other ranges, as asserted, passing the smoke to the chimney by a more direct route.

There are numerous other manufacturers, however, to whose productions we may give attention.

ARCHITECTURAL PHOTOGRAPHS; AND HINTS AS TO A "NEW STYLE."

THE architectural monuments of Western Europe have been ransacked by modern architects for general characteristics, as well as for every feature of minute detail, till they are no longer able to yield any novelty to the student. The Romanesque; the round-arched Gothic; the Pointed, in all its phases; the styles of the Italian *risorgimento*, and of the French *Renaissance;* and lastly, those of the Elizabethan, have all in turn yielded their chief characteristics to the modern system of architectural adaptation. Under the influence of a laborious study of precedents and authorities, modern Mediævalism has developed itself, by slow degrees, from the mere Cockney Gothic of the beginning of the century, into excellent imitations of the architectural works of various epochs, producing such a heterogeneous *olla podrida* of distinct styles, as surely was never before dished up contemporaneously within the range of the entire history of art. Yet, with all the stimulation of this crowd of styles, no true originality of treatment has yet made itself manifest, and the younger members of the profession—naturally thirsting for independence and for liberation from the shackles of imitation—are beginning to clamour for a "new and national style." They are sickened with the continual perpetration of shams, however excellent. The simple fact is, we have had rather too much of it. We have had sham Gothic of every phase, and sham Renaissance of all kinds: the sham Classical has not been absent from the list; and now elaborate shams of the various Byzantine epochs are beginning to appear. It should be stated also, that the most slavish and literal copies have hitherto led to the greatest amount of (professional) success.

After the utter debasement into which the noble art of the builder had sunk towards the close of the last century, the success of good copies of the noble monuments of former epochs was perhaps natural. In fact, the way to progress inevitably led the student through a period of imitation before he could hope to emerge from its narrow path to the high ground of originality. To understand thoroughly the works of his great predecessors was evidently the first step of the modern architect towards the creation of a new style, as fitted to the spirit of his own epoch, as the various styles of his precursors were intimately associated with the manners and institutions of theirs. But it is now time that the successes derived through the medium of mere imitations should cease. A sufficient foundation of appreciative taste has now been laid, upon which we may fairly hope to raise a superstructure of originality: that is to say, an originality founded upon new combinations; for certain fundamental principles must ever remain essentially the same, even should all the building materials at present known, and which have been used for ages, be entirely superseded by more or less artificial substitutes; which is every day becoming more probable.

In order to discover the manner in which new combinations may be made, there is no more simple and ready method than to study the way in which they have arisen in previous epochs. It will be found that the most strikingly new features have always arisen from the accidental blending of two or more styles which had each previously worked out a character of its own. For instance, the engrafting of the barbaresque styles of the North of Europe upon the sinking Roman produced, by combination, a marked and, in many respects, noble style, which we distinguish as the Romanesque. Several other combinations subsequently took place in the north and west of Europe which produced well-defined and distinct styles.

During the Crusades, and even at quite recent epochs, combinations of Western and Eastern styles have taken place in the East, which have not as yet been well studied; indeed, they may be said not to have been studied at all. Of this meeting and blending of styles in the East, and the novel combinations resulting from them, the architectural photographs taken by Mr. F. Bedford, while professionally accompanying the Prince of Wales in his Oriental tour, of which we spoke briefly not long since, afford many interesting examples. We will endeavour to point out some of the peculiarities thus made accessible, in something like chronological order; examining, first, some features of Egyptian architecture which have evidently received modifications of form and treatment from a reflex of Greek art. The western portico of the Temple at Dendera (No. 47) is reproduced in a most successful photograph, with a distinctness in every detail, and, of course, with an accuracy as to the relative proportion of parts, such as no drawing can possibly convey. The student can therefore study from photographs of this kind with almost the same advantages as from the monuments themselves. The effect produced by the photograph of the portico of Dendera is more truly massive and grand than that of any picturesque drawing of the same subject which we have ever met with. In the hands of the pictorial sketcher, some of the parts have been almost invariably more or less exaggerated, imparting a kind of Titanic grotesqueness in place of the lost simplicity and grandeur arising from a true artistic balance of parts. The great gateway of this temple is given in a separate photograph, in which the figures, in that peculiar kind of wall sculpture which Mr. Bonomi has felicitously called *incavo rilievo*, are reproduced with a sharp distinctness that is most satisfactory, because it enables the student to perceive that these figures present a noble grandeur of outline very different

from the conventional kind of Egyptian caricature with which we have been accustomed to see them treated, when pictures, and not architectural studies, have been the object. But it is in the near view of a portion of the hypethral Temple at Philæ that we meet with that combination of distinct national styles which are invaluable to architectural students, as pointing out the true means by which the nucleus of a new style is founded, and from which nucleus a positively original style has in many instances brilliantly radiated. The Greek of the Alexandrian age, blending with the Egyptian, produced certain remarkable effects, which evidently might have resulted in a very remarkable and very magnificent style. The sharply-sculptured foliage of the fine capitals which crown the columns of this beautiful temple bears evidence of the immediate influence of the Grecian chisel; the Greek treatment of the acanthus in the Corinthian capital being clearly a model of style held in view by the Egyptian carver. But the meeting of these two styles has produced something more than modification of treatment. It has produced variety of design, the ornamentation of every one of the capitals of Philæ being differently composed. This has generally been the result of a meeting between a comparatively new and an ancient style. We have precisely analogous examples in the history of our own Mediæval architecture. The capitals of the twelfth century, often very close copies of the Romanized Corinthian, soon began to sport into exuberant variety of design, which resulted, as at Philæ, in making every individual capital in an important edifice different from its neighbouring capital in every detail. At Esne (No. 21) we have a still nearer view of a series of highly-enriched columns, in which every stroke of the chisel may be traced in the extraordinary clearness and distinctness of the photograph. These examples serve to prove that the architectural sculptor of Egypt possessed a picturesque power of treating ornamental detail which we have hitherto not estimated at its full value. The examples of Dendera and Philæ, properly studied, are highly suggestive of new effects to be produced by a grand distribution of simple masses, and masses of ornament, in new relative proportions, which might be applied to any style in a way to infuse novelty and freshness of character, without in the least bastardizing its inherent features. The fact is that, in all that regards a true artistic appreciation of the real characteristics of Egyptian art, we have been, till quite recently, in about the same position as we were in regard to Gothic in the well-abused Batty-Langley period.

Next in chronological order come the Baalbec subjects of this interesting collection. In these magnificent remains we have examples of Roman architecture, just before its final debasement had set in; mingling the grandeur and simplicity of towering columns and majestic cornice, which it had inherited from its Grecian provinces, with features of a decidedly Eastern character. In fact, the whole style is tinctured with a kind of profuse Oriental richness which stamps it with a new and distinct aspect. At Baalbec, as at Petra, we get Roman architecture of a class not to be found in the West. It was precisely on that account that English architects (of a happily gone-by period) stigmatized it as "bastard" and "debased," seeing that it departed from the printed rules and diagrams of their "five orders." We have now learnt to feel that it is especially in its departure from routine models, however perfect, that the Oriental architecture of Rome acquires its greatest value, as showing the true ductility of all architectural styles when directed by legitimate influences. We have before now compared what have hitherto been considered debased forms with those representing epochs of the highest and most classical purity, without detriment to the so-called debased. In one of Mr. Bedford's photographs the great masses of cornice and other remains impress the spectator with a high sense of the grandiose caste of the semi-Orientalized Roman architect, under whose direction they assumed their magnificent forms, grand proportions, and richly-wrought detail.

In these remains we have examples of a grander manner of treating the main features of the Roman style of architecture than any presented in the whole range of the Palladian modifications.

Of Mediæval combinations of unusual character, full of suggestive features and fruitful hints, several interesting photographs afford remarkable examples. When the debased Roman, the Romanesque, and the Byzantine styles came into contact, in Western Europe, with the rising genius of Gothic art, certain features were evolved which, like sparks bursting from the contact of the flint and steel of art, gave a brilliant and new vitality to the architecture of the West. When a similar contact took place in the East, between the Byzantine, the Western Gothic, and the *Oriental* styles, at the epoch of the Crusades, a result took place which, while analogous in principle, was very distinct in character from the results which took place in the West. At Hasbeiya, for instance (No. 91), the semi-Saracenic remains of the citadel exhibit features capable of imparting an almost entirely new character to a transitional style such as we are now hovering over, and which is destined to conduct us eventually far beyond mere slavish imitations of Gothic, towards some such style as the French are now developing for themselves from combinational innovations, which were long considered the semi-barbaric works of their own Philibert de Lorme. In the citadel of Hasbeiya, the features analogous to Western Gothic ones, and which may be termed *capping* and *labelling*, are beautifully enriched with semi-Oriental borderings, such as might be at once adopted in certain modifications now beginning to appear in our modern treatment of Mediæval styles; and they would lead to others of equally novel and pleasing character. It is from new shoots, and the careful training of new branches, that we may hope to see a new style successfully developed, rather than from an entirely new root, which it would require ages to rear into a noble tree.

There is in this example a harmonious blending of pendants and truss-work, of an Oriental character, with the scaled columns and highly-wrought capitals of the Western Gothic of Spain and Sicily, which is very charming. The two manners are so skilfully dove-tailed, that no disaccordance is anywhere traceable. The Church of the Holy Sepulchre, also, exhibits valuable hints on combinations,—blending, as it does, the Romanesque, the Gothic, and the Saracenic styles into one harmonious whole.

Of more recent date, and more Oriental character, the minbar or pulpit in the inclosure of the Mosque of Omar abounds in hints that might be freshened into a new style of what we may fancifully term Modern Pulpit architecture. The capitals of the columns exhibit a very curious and interesting departure from the Ionic type; and the columns themselves, springing from husks of foliage, offer a pleasing example of Oriental observation of nature in works of art that we shall have occasion to refer to again in reference to a more recent style. These columns (at the foot of the pulpit stairs) form, with the pierced guard and handrail, very important features in a very graceful structure. Some of the details of the Mosque of El Aska (57) exhibit a nearer approach to our own Western Gothic, picturesquely mixed with such characteristics of debased Roman as those which are exhibited in the remains of the Palace of Diocletian at Spalatro. Of a style fitted to mingle with Renaissance works are the arcades, supported on slender columns, which surround the ablution-fountain in the court of the Mosque of Omar, at Cairo. These slender columns present an effective and peculiar feature in the absolute reversal of the effect of fluting. This is done by means of raised ribbings, terminating a few inches short of the mouldings of the base and capital. A chamber in the interior of the Mosque of Sultan Hassan, at Cairo, presents a feature which might be adopted with effect in modern apartments, when large and lofty. A very monotonous appearance is produced, in nearly all our modern rooms, by making the decoration, whether of stained paper or painted panelling, extend from dado to cornice; while in Eastern chambers, on the contrary, the decoration is only extended to a certain height. In the excavated chambers of Assyrian palaces, sculptured subjects in low relief clothed the walls to about a third of their total elevation, leaving the space above altogether unadorned, or treated in a more simple manner. In the comparatively modern chamber of the Mosque of Hassan, the lower portion of the wall has also a marked separation from the plain upper portion, in the shape of a rich lacy border in low relief, of a kind of coronet pattern, which is a feature capable of being treated with the happiest effect in the modern decoration of interiors.

Before quitting the subject of Mahomedan architecture, we would remark that in the south front of the Mosque of Omar will be found valuable hints towards the formation of a modern kind of window tracery; and that the exquisite effect of the Oriental borderings which enrich the fountain of the seraglio might be looked into, in search of a new feeling for the enrichment of string-courses, and other architectural features of an analogous kind.

Our concluding remarks on combined styles will apply to the architecture of the newly-erected Palace of the Sultan at Constantinople, of which in an earlier volume we gave illustrations. The grand River Gate, with its picturesque piers, formed by groups of columns of a Corinthian character, is a really remarkable object. The details of the capitals and bases of these columns exhibit new treatment of an Orientalized character: the bases—which form, in Oriental fashion, cups of foliage (as mentioned in describing the pulpit of the Mosque of Omar), from which the columns spring—forming a preface, or introduction, to the foliage of the capital above: the leaves at the base being made to present a different character from those of the capital, just as the radical leaves of many herbaceous plants differ from those of the upper branches. Other features of this gateway present details full of novelty: in short, this Oriental treatment of the Corinthian order has evolved many peculiarities. The south-western entrance is also extremely rich; and presents a mixture of Orientalisms, almost approaching a Hindoo feeling, which yet do not clash with the other features, many of which are of purely European character. The river front of the palace is peculiarly rich in general effect. The windows are founded upon a rich kind of Italian art of the Cinque-Cento period rather overloaded with ornament. The great defect of this façade is to be found in one of its richest features; viz., the pairs of highly decorated quasi-Corinthian columns, which only support projections of cornice carried out merely for the purpose of resting on columns, which thus become mere parasitic ornaments of the worst kind; vicious and offensive to the eye of the true architect in proportion to their extreme conspicuousness. The photographs by Mr. Bedford of the Sultan's new palace on the banks of the Bosphorus are, on the whole, the most perfect examples of photographic manipulation of the entire series; and perhaps, in clearness of definition, surpass anything of the kind yet produced.

HEXHAM ABBEY BUILDINGS.

EXAMPLES of ancient Domestic architecture are not so numerous with us that we can afford to overlook any. It is with pleasure that we point out to our readers very interesting remains of the monastic buildings at Hexham, of which few persons are cognizant. Those who have stood on the broad and leafy Seal, and looked down upon the town, rising so irregularly up the hill-side, will not easily forget the fine position of the Abbey Church; nor will the quaint names of the sloping streets speedily pass from remembrance. Here is Priest-popple; and there, at opposite extremities of the town, are Hencotes and Cockshaw, fancifully supposed to be named after the separate establishments in which the monks may have fastidiously reared their fowls. Here is St. Mary's Chare; and there Gilligate—St. Giles's-gate. Here is the less reverently named Bone-street, and there is Pudding Chare; and there is the historic Battle Hill. Those who have enjoyed this privilege must endorse the wisdom of St. Wilfred's choice of site for his Saxon cathedral; for, in all Northumberland, there are no harvests so early as those in the vale of Hexham; no trees with richer foliage; no landscape more diversified. Two brooks, Hextol and Halgut, run into the Tyne within sight. The former of these, Hextol,—height of source,—gave name to the Saxon town Hextoldesham: which term the Normans contracted to Hexham. The latter, Halgut, inversely, may have owed its appellation to its neighbourhood to the seat of piety, the monastery.

Of this once famous establishment, the church and chapter-house, and abbey gateway, are generally supposed to be the only remains. But we find that the monks' refectories are still in existence. On the west side of the cloister-space—some 100 feet from the westernmost part of the church left standing—are two long, vaulted and ribbed chambers, now used as shoe places, lumber places, and wine vaults, to residences built adjacent to them, and surmounted by a modern ball-room and court-house. These, on examination and comparison, prove to be the refectories of the ancient abbey, and to have formed the boundary for the western walk of the cloisters.

The arrangement of the abbey buildings, generally, appear to have been nearly identical with those of the great monastery of Clairvaulx. The refectories at Hexham were approached from the cloister by two transverse groined passages, still in existence, though so obscured by modern partitions as to be difficult to trace without a close investigation. The southernmost portion of the wall facing the cloister retains portions of the lavatory, and, in the thickness of the wall at this

point, there is the passage to a staircase leading to the dormitories, which were doubtless above them. Of the two transverse passages mentioned, one is in the north-west angle of the cloister, and gave access to the northernmost refectory. The second is in the same side of the cloister, close to the lavatory, and gave access to both refectories and to the flight of steps in the thickness of the wall leading to the dormitories over.

On the east side of the cloister, a portion of which is formed by the west wall of the south transept, there is masonry that indicates the position of the prior's refectory, which, unlike those of the monks, is ruined. A length of wall showing the springs of the groining and the recess for the fireplace is all that is left.

The wall of the south transept formed one side of a passage leading from the cloister to the portions of the monastery eastwards of it. The southernmost wall of this passage formed the north wall of the magnificent chapter-house; and the south wall of this again formed, in its turn, the north wall of the prior's refectory,—all on the east side of the cloister, as at Clairvaulx. The chapter-house is in sufficient preservation to enable the eye to realize its exceeding beauty. The roof was formed by nine bays of groinings, supported by four central columns; but all is now open to the sky. The window openings were most elegantly managed. Flush with the internal surface of the wall were isolated columns, dividing each opening in two. Looking through these, and through the thickness of the wall, the eye would be met with a second isolated column, dividing and arching the opening on the exterior in the same rich manner. There were two doorways, one leading into the cloisters, and the other opening eastwards into a vestibule.

The north wall of the cloister, which forms the southern boundary of the ruined nave of the church, has been rebuilt in the Perpendicular era. It has a fine Perpendicular doorway in the western angle, close to the passage leading to the refectories; and a Perpendicular moulded recess midway. Thus three sides of the cloister are made out. The fourth is overthrown, and overgrown with grass.

We would refer our readers to our account of the recent remodelling of the choir of this grand old church.* We told of the destruction of the Lady Chapel, and of the building of a new east end. For the complete formation of this new east end, one bay of the fine Perpendicular roof has been taken down, and a modern open-timbered roof of the Early English pitch substituted for it. We much fear that this is a loss preliminary to the destruction of the whole roof. Subsequently to the burning of the nave by the Scots, the edifice underwent a thorough repair. Thought may have been entertained of rebuilding the nave, as one wall of it was actually rebuilt as it stands to this day; but, ultimately, a Lady Chapel was thrown out to the east, to obtain the required space. The edifice was then magnificently decorated with carvings in wood and stone, and paintings. We have detailed the removal of the shrine erected in honour of Prior Richard, historian of Hexham, and of the destruction of the open panelled screen-work confining the Ogle shrine. The altar painting found *in situ*, on the destruction of this latter shrine, we find to be a triptych, painted in the same style as the panels of the wonderful rood-screen. The subjects in each compartment are restricted to the vesica form, and have diapered backgrounds. In the centre panel is the figure of Christ rising from the tomb: an expression of compassionate, sorrowful agony pervading his features, the wounds flowing with blood. The crown of thorns, rendered thorn-colour, is slightly in relief, and is surmounted by a nimbus in much bolder relief, from which the gold has not yet altogether perished. A wavy boundary of conventual clouds surrounds this figure. The diaper consists of hexagonal rosettes, containing the letters I H S in each of them, and is on a deep crimson ground. In the compartment on the right hand of this is a full-length figure of the Virgin. She is treated as the Queen of Heaven, and stands on a globe surrounded by a vesica-formed boundary of golden rays. She bears on one arm the infant Christ, and in the other hand a sceptre. An ornament on her breast, her sceptre, her nimbus, and that of the infant are all in bold relief, and bear traces of gold. The robe is crimson, with a geometrical pattern raised upon it, contrasting with a green mantle diapered with *fleur-de-lys*, falling in folds from the arm on which the child is held. The background of this picture is formed of a diaper of stars upon a blue ground. The third compartment represents St. John the Baptist, bearing in one hand a chalice and in the other a palm-branch. The edge of the chalice, the stem, and the base, are all decorated with raised ornament. This figure is diapered in green, and is surrounded by a cloudy boundary of the same form as the others, and the diapered background is similar in design to that of the Virgin's panel. This minute work of art, executed with so much care and so much cost, and hidden for so many centuries, has been preserved by a green baize covering it when the Ogle shrine was converted into a pew. The hammer has not been withheld, for there are nails and tin-tacks here and there in the frame surrounding it. Mr. Wilson, of Alnwick, has become possessed of it from the contractor who pulled it down, by order, strange to say, as old materials.* The roof of the choir, with its moulded ribs and carved bosses, is as interesting a relic of the same period, and equally impossible to replace.

We would say, too, a few more words concerning the Saxon crypt, in time. The Early English builders of the abbey church, after the Saxon building had lain a mass of ruin for two hundred years, evidently took the crypt into consideration of their plan. It had three entrances, as we may see at this day.

The Early English builders adapted the position of the piers of their central tower to these entrances. The foundations of all are clear of the descents into the crypt. They placed their north-west pier on the south side of the northernmost descent, because there was a north aisle; but the south-west they were obliged also to place to the south of the second entrance, because there was no aisle on that side, otherwise the entrance would have been in the cloister without the church. As it is, all three entrances were within the fabric. One was used exclusively by the priest serving the altar, as it leads from a portion of the edifice reserved for the ecclesiastics, still containing the staircase to the chambers over the chapter-house and prior's refectory, immediately down to the martyrium. The other openings were for the descent and ascent of the faithful. They descended from the centre of the nave into a lobby, where they found themselves facing the martyrium, and whence, probably without entering the innermost and more sacred portion of the crypt, on traversing a passage skirting the martyrium, they ascended into the aisle. These three sets of stone steps are all *in situ*; nevertheless, the descent is made now by ladder, because of the trifling cost of disengaging either of the ancient openings from the rubbish with which they are blocked up. It is highly desirable that this work of disencumbrance should be accomplished; but—and we add the few words we premised we had to say—the greatest caution should be used. Any rash digging so close to the foundations of the piers of the tower arches might be fraught with great disaster. Already damage has been done by the undirected explorations of the sexton, portions of the vaulting having fallen in close to the foundations of the south-west pier.

To return to the refectories. These rare remains are cut up, by partitions, into places for the mean purposes for which they are now used, and, as we have said, are surmounted by a ball-room and court-house, to which access is gained by external stairs. Would it not be a work of remunerative archæological interest to remove these partitions, and restore to these chambers their original proportions?

* Vol. XVIII., p. 681.

THE ROYAL ACADEMY.†

EARLY ARCHITECTURAL MEMBERS.

A HISTORY of the Royal Academy was a good idea for a literary work; but it ought to have been gone into in an impartial and disinterested spirit, and not with the feeling either of a partisan or of an opponent. Mr. Sandby's volumes are very interesting and agreeably written; but the admitted purpose with which he set out was not so much to give an impartial history as to make that history tell in all possible respects in favour of the Academy. The intrinsic value of such a history is by no means enhanced by such a foregone determination on the part of its author; still a great portion of the work is not in any way affected, one way or other, by the author's endeavour to remove "a wrong impression" arising from "ignorance of its proceedings," and exposing the Academy to "unkind and undeserved opposition." We are not amongst those who assert that nothing is due to the Academy; but we have strong feeling as to errors in its management and its want of enlarged and liberal views.

The plan of the work needs little explanation. The author first endeavours to show the state of anarchy and confusion into which the old art societies, preceding the foundation of the Royal Academy, had fallen at the time when it was established; and he then divides the subsequent history into periods,—being the term of each presidentship,—in order that he might group together in successive chapters, as far as possible, the history of the members with that of the Academy in each stage of its progress. The biographical notices have somewhat of the dictionary form, and are upwards of 200 in number. They embody much information from detailed memoirs, notices in periodicals, and direct information from the members themselves.

The first Academy, as our readers may remember, was projected by Charles I., in 1636. It lasted only five years as the *Museum Minervæ*. Another academy was planned by Evelyn just two hundred years ago, or in 1662; but it soon shared the fate of the first. Half a century afterwards, Kneller repeated the attempt, but on a small scale. A proposal to found a Royal Academy was made to Goverment by Thornhill, and even the very site whereon it is now accommodated, "at the upper end of the Mews," was then suggested. 3,000*l.* was the sum requisite for the building! but, although the project was approved of by Lord Treasurer Halifax, the Treasury refused to grant so large a sum for such a purpose.

Fresh attempts to found an Academy of Art were made; and in these Hogarth, Benjamin West, and others of more or less note took part, as also did the Society of Artists, the Society of Dilettanti, and the Society of Arts. It was George III., however, who, in consequence of certain "painters, sculptors, and architects of this metropolis" memorializing him on the subject, founded both the Royal Academy and its exhibitions.

The plan of the proposed Academy was laid before his Majesty, at his request, and signed by him, on the 10th of December, 1768,—the date, therefore, of the establishment of "the Royal Academy of Arts in London, for the purpose of cultivating and improving the arts of painting, sculpture, and architecture."

Apartments were provided for the academy in the king's own palace of Somerset House; and when the old edifice was replaced by the present one, special apartments were consigned to the academy by the king's own arrangement with the Government, who were to have the new building for public offices.

The limitation made by the instrument of institution of the number of the Royal Academicians to forty, has been a ceaseless source of contention from the first foundation of the academy to the present time; but we do not intend now to enter either on this or any other moot question connected with the academy; preferring to occupy our remaining space with a few particulars as to one or two of the architects and sculptors who were connected with the academy at its outset.

THOMAS SANDBY, R.A., the first professor of architecture at the Royal Academy, was born at Nottingham, in 1721. He is said to have had his thoughts first directed to the arts as a profession by having perseveringly pursued a new system of perspective, which he brought to a state of great perfection and readiness of application. Encouraged by the reputation he acquired by a drawing of his native town made upon these novel rules, he came to London, and was, in 1743, appointed draughtsman to the chief engineer in Scotland. In this capacity he was at Fort William, in the Highlands, when the Pretender landed; and was the first person who conveyed intelligence of the event to Government in 1745. In recognition of his merits as an artist, and his services to the State, His Royal Highness William Duke of Cumberland appointed him his peculiar draughtsman; and after the termination of the struggle in Scotland, he followed the duke in his campaigns in Flanders.

In 1746 he was made Deputy-Ranger of Windsor Great Park, an appointment which he held for fifty-two years. In this capacity, combined with his professional position as architect to the king, he planned, in 1754, the construction of the Virginia Water, the largest artificial lake in the kingdom, and shortly afterwards published a series of eight folio views, illustrating the improvements and alterations in Windsor Great Park effected by his labours. In 1755 he was one of the committee of artists who combined to propose a plan for the

* A letter as to this will be found on another page.

† "The History of the Royal Academy of Arts; with Biographical Notices of all its Members." By William Sandby. In two volumes. London: Longman & Co. 1862.

foundation of a public academy for the cultivation of the arts. Subsequently he joined the Incorporated Society, and was eventually chosen one of the foundation members of the Royal Academy; and as the Professor of Architecture he continued annually, until 1796, to deliver lectures on architecture at the academy, largely illustrated by his own drawings. These lectures were never published; but the original manuscript was presented by the late John Britton to the library of the Royal Institute of British Architects. His aim, in addressing the students, appears to have been, not so much to propound new theories, as to correct the false taste of the period; to lay down the simple foundation principles of the art as clearly as possible, and to lead the young architect to combine in all his designs utility with elegance, and harmony with variety. His executors offered the MS. to the Royal Academy for publication: but it was declined by the council on the ground that they did not possess sufficient funds to apply so large a sum as would be required for the purpose, in consequence of the numerous pictorial illustrations he had introduced in them. For two years preceding his death, ill health rendered him unable to deliver his lectures, and Edward Edwards, A.R.A., read them for him from 1796 to 1798.

A large number of his drawings are in the Soane Museum, the print-room of the British Museum, and the royal collection at Windsor Castle.

Freemasons' Hall, in London, was built from Sandby's design, in 1775: the carved wainscoting around the altar of St. George's Chapel, Windsor, was designed by him; and in 1768 he gained the first prize in the competition for the erection of the Royal Exchange in Dublin, equally with Cooley; but the latter, being an Irishman, obtained the commission.

He died at the Deputy-Ranger's Lodge, in Windsor Great Park, on the 25th of June, 1798, in his 77th year, and was buried at Old Windsor.

GEORGE DANCE, on the death of Sandby, was elected, in 1798, to succeed him as Professor of Architecture. Dance was born in 1740. By the circumstances of his position, as a son of the architect to the corporation of London, he received an education and opportunities of study which fitted him to follow the profession of his father, whom he succeeded, in 1768, in his office of city surveyor. His first architectural work was the design for Newgate, which was begun by him in 1770. The Giltspur-street Compter was also designed by him; and he added further to his fame as an architect by the erection of St. Luke's Hospital. The front of Guildhall, erected in 1789, was from his design; as also the Boydell Shakspeare Gallery, in Pall Mall (now the British Institution), and the theatre at Bath, lately burnt.

Dance does not appear to have delivered any lectures as Professor of Architecture to the Academy, and he resigned the office in 1805. In 1811-14, two folio volumes of profile portraits were published, drawn by George Dance, and engraved by William Daniell, in imitation of the original drawings. In this taste for portraiture he followed his brother Nathaniel's branch of art rather than his own. In 1816 he resigned his appointment as city surveyor in favour of his pupil, William Montague, and died on the 14th of January, 1825, in his 84th year. He was buried at St. Paul's, near to the last earthly resting-place of Sir Christopher Wren, and John Rennie, the engineer.

WILLIAM TYLER, R.A., though described as one of the sculptors among the foundation members of the academy, was professionally an architect; and in 1786 he designed the Freemasons' Tavern, in Great Queen-street, Lincoln's Inn,—a separate building from Freemasons' Hall, erected ten years before by Sandby. Tyler died in 1801.

JOSEPH WILTON, R.A., one of the academical sculptors among the foundation members, attained to considerable eminence in his profession, and is the first English sculptor who enjoyed the advantage of a regular course of academic study. His father was a manufacturer of plastic ornaments for ceilings, &c., and employed a large number of persons in his workshops. Joseph was born on the 16th of July, 1722, and was first taught in his profession by Laurent Delvaux, at Neville, in Brabant. After eight years spent in Italy, he came back to London in company with Chambers and Cipriani, and with the latter was chosen as a director of the Duke of Richmond's sculpture gallery in Spring-gardens. He was thus employed till 1770. He had been previously appointed state-coach carver to the king, and made the model for the coronation coach for George III.

On the death of his father he became comparatively independent, and took up a more decided course as a sculptor. The architects of his day being generally commissioned to carry out the sculptured decorations and details of the buildings they designed, the execution of monuments, statues, &c., was the only work left for the professional sculptor. Wilton's first public monument was that erected to General Wolfe, the conqueror of Quebec, in Westminster Abbey. Among his subsequent monuments were those to Admiral Holmes, the Earl and Countess of Monteath, Pulteney Earl of Bath, and Dr. Stephen Hales, the divine and botanist. He also made busts of Bacon, Cromwell, Newton, Swift, Chatham, and Chesterfield.

Principally by such works as these he amassed a large fortune, and was enabled to live in a style of luxury proportioned to his means. He occupied a large house, and assembled goodly company at his table. Lord Charlemont and Mr. Locke among the aristocracy; Sir Joshua Reynolds, Sir William Chambers, Bartolozzi, Cipriani, and Richard Wilson, among the Royal Academicians; and Dr. Johnson and Baretti, among the men of letters, were his frequent guests. When age crept upon him he accepted the office of Keeper of the Royal Academy in 1790, retaining it till his death, which took place on the 25th of November, 1803. A bust of him, by Roubilliac, was given by his daughter (Lady Chambers) to the Royal Academy.

We may add, as a fact not known to the writer of this book, that the Queen has sanctioned the following resolution of the Council of the Academy:—"That it is considered desirable there shall be an Honorary Retired Class of Academicians." The retired academician is to receive an honorary pension of 100*l. per annum*, retaining the title R.A. This will, of course, create vacancies, and so afford opportunities for additions to the body.

ELECTRIC TELEGRAPH DELAYS.

NOTWITHSTANDING all the useful purposes to which this wonderful power is now put, and the hopeful prospects of the future, there is at present just reason for complaint of delay and mismanagement.

From most parts of Europe, and from the chief towns and counties of the United Kingdom, intelligence is usually, and should always be, conveyed with marvellous rapidity to and from the chief central and other electric telegraph stations: there are, however, far too many neglects even in this matter; but the conveyance of messages between the various metropolitan railway termini is now so ill managed, and so little certainty can be felt of punctuality and quickness, that the right progress of this valuable introduction is greatly retarded. At present it generally takes longer to convey intelligence to its destination in London than it has taken the news to come from hundreds of miles away.

When we consider to what a vast extent this invention must ere long come into use, and that most places of business, public establishments, fire brigades, police stations, &c., will require the means of receiving and transmitting electric telegrams on their respective premises, it is evident that central arrangements of a simple but perfect kind must be made on a gigantic scale, of which we have seemingly at present but little conception. Look at the great space of the General Post-office, at the army of men who are there daily engaged; and the time will probably come when an establishment of not less proportions will be required in connexion with the electric telegraph in London.

But in order to do this with rapidity, which is so desirable, it is necessary by all means to gain the public confidence. To show the advantages of this introduction, and in order to effect it, there should be arrangements made between existing companies, instead of a clashing of operations, and a hostile spirit, which are of anything but of advantage to the public, and have the effect of causing delays, and so damaging the character of the electric telegraph in the opinion of many.

Numerous and just complaints have been lately made in the columns of the public press which show the necessity of immediate and efficient changes. Many complain that it would be quicker to walk, or to take an omnibus, or send by the post, than to depend on the telegraph. In fact, it is getting the character of a slow-coach. The clerks employed in the several stations grumble at the smallness of their pay; of overcrowded and unhealthy offices; and of the engagement of youths who are not skilful or experienced in their work. This should be seen to; for in this matter, as it is in most others, success is only to be obtained by the employment of competent persons, and by fair and liberal treatment.

As matters stand, we depend chiefly on boy-messengers for taking the telegrams to their destination, and most of them are slow "Mercuries." Persons who are accustomed to wander in the City cannot have failed to notice the crawling progress of many of those messengers, who may be employed in conveying tidings of life and death or on other momentous business. In the streets the postmen, the commissioners, newsboys,—all move more rapidly than the boys connected with the telegraph.

Whatever difficulties there may be in central arrangements, there can be none in effecting improvement in this respect; and the managers of the electric telegraph should bear in mind that the General Post-office is rapid in its operation, and that there is every likelihood of an advance in this respect. In connexion with this service, swift horses are employed, and skilful drivers take the mails through the streets at a great speed; and the letter-deliverers are not slow at their work. When we notice all this, it is impossible to feel any doubt that a more effective delivery of telegrams can be effected; and it would be certainly of immense advantage to the public, and a sure profit to the companies, to have new and better plans carried out.

EVIL BURIAL PRACTICES.

ENGLISH burial practices are not always consistent with sanitary requirements: the length of time dead bodies are retained, and the mode of carrying a coffin to burial, frequently produce disease in the living. Medical men and clergymen can, in their own experiences, point out many cases of injury to the living by retention of the dead, especially where death has arisen from some contagious or infectious disease. Carrying the coffin on the shoulders of men, and covering coffin and men by the pall, are so objectionable and injurious in some cases—as we, years ago and since, have urged—that the practice ought to be preventable by law. Clergymen who have much burial-service experience know that bodies are frequently in such a state as to taint the church, and to render it most disagreeable to stand sufficiently near to perform the burial service.

Will our Local Boards of Health ever ask for power to compel the removal of dead bodies from the midst of the living before injurious decomposition has set in? The time has now come when such a step might be taken.

ACROBATS *versus* ART AND NATURE.

IT is very disheartening to find that in these (enlightened?) days a clever mountebank seems to have, for the stupid multitude, attractions far superior to the beauties of nature or the charms or curiosities of art. At the Crystal Palace, when Blondin is announced to ascend the rope, crowds flock to Sydenham, and everything else is left unnoticed by the assembled thousands, who look with insane enthusiasm at the ludicrous and foolish capering which each instant exposes a fellow creature to the risk of destruction. Thus far Blondin has walked the rope without disaster; but several accidents have happened elsewhere; and Blondin only needs "rope enough" for the grand finale: his fate is indeed wavering in the balance. One would have thought that such a sight as the mass of bruised flesh and broken bones lately known as the intrepid female Blondin would have given a shock to the feelings of those who witnessed or heard of it; but such has not been the case; for the crowds would go to the same place to see another female Blondin smashed. The acrobats themselves are not by any means so much to blame as their employers and the empty-pated sight-seeing crowds who urge them on. The French female acrobat who fell at the Hippodrome lately, betrayed the, in their case, excusable motive which prompts to such risks, when she cried incessantly, in French, after returning to consciousness, "My poor children! my poor children! you have lost your bread-winner!"

It is really time, however, that a stop were put to these discreditable exhibitions amongst a people who affect to be disgusted with the idea of Spanish bull-baiting, and with the narratives of ancient gladiatorial and other sights not one whit more barbarous than that of acrobatic Blondins and Leotards, male or female.

RELIEF FOR LANCASHIRE AND CHESHIRE.

THE distress in the cotton districts continues to spread; and, unfortunately, there does not yet appear to be even a chance of improvement. Instead, there is the dreary prospect of work becoming still more scarce; the number of families in poverty largely increased; and, besides, the coming winter will add to the misery and suffering of many thousands. The *Times'* correspondent tells us of the sad condition of a large part of the population of one town; of the disappearance of furniture; the huddling of families together in beds upon the floor of their single dwelling-room. In hundreds of cases every article which would produce a sixpence has been sold or pawned; and one pawnbroker reports that, so completely have the poor people been obliged to strip themselves, for some time he had not had anything offered to him.

We have the sure prospect of the winter's cold coming upon men, women, and children, already deprived of the comforts of their homes, ill-fed, and thinly clad; and the most of whom have been accustomed to warm fires in their houses, and heated atmosphere in the manufactories. To relieve, in every possible way, the hard distress which has fallen upon such a large industrial population, is the duty, not only of the rich, but also of every one who is fortunately at this time earning a sufficient livelihood; and we have no doubt that, on this pressing occasion, British workmen are anxious to assist and will worthily do their duty towards their less fortunate brethren, who are for a time placed in such deep trouble. Systematic management, however, is required, both as regards the collection of funds for the north, and also distribution of them.

In looking over recent subscription lists, we are glad to see the entry of the order of Foresters for 500*l.*, and such notices as the following;—the men in the employ of Messrs. J. A. Robertson & Co., Tweed Ironworks, in lieu of a treat, 30*l.*; first and second instalment from the men in the employ of Messrs. Bass & Co., steam saw-mills, Burton-on-Trent, 4*l.*; weekly subscriptions collected by members of the Reading Working Men's Christian Society, 10*l.*; penny subscription at the establishment of Messrs. Easton, Amos, & Sons, Southwark, 5*l.* 12s.; contributions of the block printers and a few others, in Summers-town, Tooting, 4*l.* 13s.: there are also amounts, by weekly subscriptions of 2d. each, from persons in the employ of Messrs. W. Clowes & Son. At Messrs. Pontifex's large works at the Isle of Dogs, the foremen of the different departments have undertaken to receive, weekly, at the doors of this establishment, a penny or any other voluntary subscription which those employed there choose to make: the document announcing this intention, and urging the claims of the cotton-workers, is very creditable to all concerned.

We trust that these good examples will be generally followed: if so, a very useful sum will be gathered by this means; and it must be borne in mind, that we have the requirements of at least several months to meet; and that the continuance of the subscriptions is most desirable.

In St. Pancras, apart from the City, the first important parish movement seems to have been made to meet the distress existing among the cotton artisans. A meeting has been held in the Vestry Hall, at which it was suggested that St. Pancras might take the initiative amongst local boards in instituting an effective organization for promoting so good a work of national character. Every right-minded person in the parish would approve of the vestry's commencing such a movement. The suggestion was unanimously agreed to; and it was arranged that energetic steps should be taken to carry out the object in view. The example of St. Pancras might be well followed by Islington, Marylebone, and other large metropolitan parishes.

Having considered very carefully the condition of the Lancashire and Cheshire workpeople, guided by the authentic reports which have from time to time appeared, and other information which can be relied upon, it appears certain that the out-door poor-law relief, as at present administered, is insufficient for the purpose of keeping life in the bodies of the unfortunate recipients. How can it be expected that this can be done with about the shilling a week average per head which is allowed? It must, therefore, be by public subscriptions that a vast amount of this distress is to be alleviated; as, for example, by the distribution of soup, coals, help for rent, and assistance in providing necessary clothing.

Besides hunger, there is also danger in the idleness into which so many have been thrown; particularly young women. Efforts are being made to get those who are willing, and of suitable character, placed as domestic servants. This will afford a certain amount of relief; and, besides, rooms have in various places been opened for those who choose to be employed in needlework. Instruction is also given in reading. Schools, which might be managed by teachers who would volunteer in the various localities, might be opened for the young men and boys. There is, unfortunately, too much space which might be devoted to this purpose in the closed warehouses and manufactories. Education has in those parts been sadly neglected; and through the present evil a certain amount of good might be done; and, although some will say that the troubles of their condition will prevent the men and their wives from thinking of other things, it might be worth while to try the effect of a few popular and instructive lectures. Could instruction be blended with amusement, so much the better; and we are pleased to observe that something in the shape of amusement has been shared in by the people out of work at Preston. At the Guild festival there, the vicar, in the parish church, however, rebuked the wealthy manufacturers of the town for their want of sympathy for the sufferings of their unemployed factory labourers. "The cry," he said, "has gone forth through the length and breadth of our land, which all ears have heard; and almost all hearts have felt a sentiment of compassion and benevolence. Strange to say, there are some whose ears have heard the cry, but whose hearts have not felt the compassion; and these are the very men who have grown rich upon the labour of those who now appeal to their sympathy, but who appeal in vain—yes, in vain!" These words seem to justify the very general rumours as to the apathy of many of the richest factory owners during the present crisis. The vicar must have every means of knowing the actual facts; and one can scarcely suppose he would venture publicly to rebuke an influential class without sufficient reasons. It is sad to think of such heartless selfishness. Pity they could not be compelled by law to support, in their hour of adversity, those who have enriched them. Surely these contemptible fellows might at all events bestir themselves to a little better purpose than they appear to have yet done in preparing the way for a future supply of cotton. Their own self-interests ought to prompt them to do so. Something, however, is being done in this respect; and no time should be lost in securing a future supply, independent of America.

HOLY WELLS.

THE subject of holy wells, it is submitted, is worthy of consideration; and, in the hope of provoking more extensive research, the following brief paper has been drawn up. As the archæologist attempts to retrace the history of them to their origin, the mind is carried back to a remote antiquity, but can only conjecture the source in which they have had their commencement. In pursuing the inquiry, however, we enter upon a flowery path in which poetry and fancy afford the richest sensations of romance; for both the classic and the modern muses garnish their choicest strains of narrative with conceptions drawn from the sacred spring or venerable holy well. We are at once reminded of the nymphs in the imaginations of the ancients; and the many fanes or grottoes, with their streams hard by, whose mysterious waters were the reputed baths of deities, and the subject of so many fictions. It is not inadmissible to suppose that these notions and mysteries which have been transmitted so extensively have, like others widely disseminated, had their commencement in obscure traditions and perversions of some important realities, such as those of the Jordan; or the marvels of Siloam and Bethesda may have produced the counterfeits of ancient story. Then the superstitions of the heathen, we know, were often adopted, and would easily be grafted on the practices of an unenlightened age in the church's history. The mind of the vulgar clings with tenacity to resorts for gifts of healing, or communications from unseen spirits; and the teaching of a better faith would not escape the mixture of such delusion. Hence, not only has pagan sprinkling of holy water been introduced in the Middle Ages, but localities of streams or fountains have been confided in for a mysterious presence and supernatural virtues. In fact, wells of heathen fame have been transferred to saints in many instances. The legendary history connected with our subject bears us to the very extreme of poetic licence; and the faith in it has been more than excessive. How many of our English towns owe their names, or the terminations of them, to their sites, which were selected for the supposed guardianship that accompanied the sainted well that they could boast of. Not only does the city of Wells derive its name from its own St. Andrew's, but we may infer that the Chadwells, the Holwells, the Barwells, the Eastwells, and others of our own county (Leicestershire), ever have had their high repute for healing or benedictory attractions; and the streams, which once lured the pilgrim to devotions and works of supererogation, may still be found to luxuriate upon with pensive contemplation of the past, and thankfulness for the brighter light that has dissipated the delusions. Frequently has Mediæval art enshrined the sacred spot; and the structures have been singularly picturesque. One laments on this account that, from their delicate construction and the deadness of archæology in later times, few remain to illustrate the artistic skill and the romantic fancy of our forefathers; still the imagination is aided by a few solitary remaining examples; and with them, and the knowledge of what was once attributed to the patron saint, we may bring up visions of the past, and place ourselves for the moment amongst these exquisites of bygone times. The most remarkable relic of this description is that existing at Holywell, in North Wales. We may suppose that this has escaped the ravages of time, and an ultra-Protestantism, from its great beauty, and from the durable character of the stonework. The notable legend of St. Winifred may possibly have secured for it a continued veneration; for a lingering faith in what had once been paramount with a simple people is not easily extinguished; and the "Golden Legend," published in 1512, would be treasured and appealed to as the exponent and verification of the story.

When a spring or stream had gained repute for celestial occupancy, it was a practice to choose a site upon it for a baptistery; and probably most holy wells have been thus honoured, or have served the purpose of furnishing the water for administration of baptism in the immediate district. But, besides the common use, the superstitious reliances on the saints of these springs for various helps have been remarkable, and the powers of cure imputed to them innumerable. Each well was commonly in repute for its own specific virtue; and this will often give an interest in tracing the origin of their names. Even to the present day the wishing-wells perpetuate the absurdities of these superstitions. But, leaving the puerilities of the present and the grosser delusions of past ages, there are aspects in which we may contemplate the history of these things with favour: benevolent intentions and pious devotion are seen in a manner to command our admiration. There are numerous examples of remains in Cornwall. In many cases the hermit's cell has been built near the sacred spring on some cliff, or sea-commanding eminence, or even insulated rock; that at the tempest's howl the recluse might be engaged in watching the dangers of the seafaring adventurers, and ply his earnest intercessions in their favour, or aid in restoring the half-drowned mariners. Such self-sacrifice and devotion to the vital interests of others is worthy of perpetuated remembrance, if only to provoke to equal zeal the professors of a purer faith. Other holy wells, with the hermit's oratory, have had their sites remarkable for their extreme seclusion, as being favourable to ascetic sentiment, and some for the impressive scenery surrounding them. In this brief notice of the subject, no elaborate research after existing examples is undertaken. Their design and a general view of them only are aimed at. To give an account of the many relics of this class, with their history, traditions, and supernatural attributes which still linger in some instances, would be more laborious than valuable. One ruin of a Well-chapel, however, may properly be brought into especial notice, as it is but little known, and its charms are exquisite probably beyond comparison. In the beautiful vale of Clwyd, near the Cefn rocks, there remains a cruciform chapel. The walls of the three eastern limbs of the cross area are yet standing, and the western portion has enough remaining to show what the fabric was entire. The well is in the nave, or, more properly, the western limb; and the wall inclosing the well is still in good preservation to the height of some 18 inches above the flooring. This is happily sufficient to show the curiously-elegant design of this baptistery, as we may suppose it to have been, the bases of the shafts and other details being tolerably perfect. The inclosure of the well is angular, presenting in plan a

✠

kind of asterisk; and from each angle has risen a slender elegant pillar, thus encircling the sacred fount with a double colonnade, which, with the main walls of the building, would support a ribbed and groined roof with intersections and ramifications amounting to a singular display of taste and beauty. But trees are growing in the midst, and their roots threaten speedy destruction of the chapel walls. If there be such a thing as æsthetic religion, here it must have had its most favoured residence. Embosomed in really enchanting scenery, with the gurgling pellucid stream, and rocks of fantastic shape and singular richness, doing their utmost with the crowding hues of various foliage to make the glen unrivalled in its charms and sweetness—the woodland songsters holding perpetual festivity, and the darting finny tribe bespeaking an enjoyment of fairy-tale rather than of ordinary existence—here the calm retreat and gorgeous shade must have imparted an unearthly sensation most potent for reverie and religious abstraction. To this little baptistery-chapel attention is particularly invited.*

MELBOURNE, VICTORIA.

In consequence of the general monetary depression now existing in this colony, much less is doing, either in public or private works, than has been the case for some years past. Less money has been voted for public works by the Parliament just closed than in any previous session. The main lines of railway are hastening towards completion: already a single line is available on the Ballarat branch, and three trains run up and down every day. On the other (Murray River) branch, the line is opened as far as Kyneton, 56¾ miles from Melbourne, and will be completed through to Castlemaine and Sandhurst early in September. The works done are generally of the most substantial character; indeed, many think that less expensive works would have suited the circumstances of the colony.

Of public buildings, the Treasury and Government Printing Office alone may be said to be completed; indeed, the former is scarcely so even now. This building is very creditable, in many respects, to the Public Works Department and those who have had the carrying out of the works. Closing the end of one of our leading thoroughfares, it occupies a commanding position. To our mind, the proportions of the ground-plan, where there was no necessity to be so restricted, are the first fault: another objection is the meaningless use of columns and pilasters. The style adopted is Italian, and the material used Bacchus Marsh freestone. Although originally intended for the Colonial Treasurer only, in consequence of the altered circumstances of all things, several departments have, within the last month, moved in, pending the completion of other offices; and, in order to concentrate the public offices, other large buildings have been leased in the immediate neighbourhood.

The Post-office, about which so much fuss was made a few years since, progresses very slowly: the second contract is scarcely completed, and Parliament has voted only 15,000*l.* to be expended this year: at this rate it is hard to say when it will be completed. From a document we have before us, it would appear that some 50,000*l.* have already been expended, and the walls are not yet ready for the first-floor joists. The stone used is from Point Veritinat, in Tasmania, of a very good even creamy white. We think a description of the design has already appeared in our columns. Rumour says so many alterations are being made from time to time in the drawings, that there will be a very wide departure from the original design. By-the-bye, this job is said to have given a death-blow to the associated masons who had the last contract; and, as far as uniform wages and rules as to sub-contracting and piece-work, the Masons' Society is also at an end. We have often revolved in our mind, in how far has the present depression in trade been attributable to the really unhealthy state of the wages-market? True, a mechanic has a right to sell his labour in the dearest market; but the effect has been to terrify capitalists from investing; for in most instances those who have invested have done so to their sorrow. As a result of this forcing of wages, there is less work to be done, and many hands have been obliged to quit the town for more promising localities. Still every one is looking for times to mend; and it is to be hoped that men will not be again so blind to their own interests as to refuse a fair day's wages for a fair day's work. Anomalous as it may appear, it is nevertheless a fact, that the higher the wages the less labour is done for a day's work. Of course there are honourable exceptions; but it is notorious that the greatest "*sticklers*" for high and uniform wages were the least deserving of encouragement. However, enough on the labour question for the present, except to mention, as the rate of wages, 8s. to 10s. for carpenters, plasterers, and bricklayers; and 10s. to 12s. for masons. In some cases higher wages are had; but many men, on the other hand, will club together, and wittingly take small contracts at prices that will leave them less wages than they would work at for a master.

Among other buildings we have a new theatre, called the Haymarket, which is being pushed on most vigorously, only a few months having elapsed since the small buildings originally occupying the site were pulled down. It has a frontage to Bourke-street of 66 feet, and extends right through to Little Collins-street, a depth of 313 feet. The front is devoted to entrances and shops, the first-floor being divided into two large saloons. The theatre itself is 68 feet by 62 feet, and 50 feet high, exclusive of stage, &c. The principal façade is stuccoed, and surmounted with a gilt figure of Apollo, about 8 feet high. Of the architectural merits the less said the better. A joint-stock company is said to be the proprietary, of which Mr. Coppin is a leading member. Mr. Cornwall is the builder, and Mr. Conlon has the carrying out of the building. The present outlay is said to be about 10,000*l.*

Another large building, rapidly approaching completion, is the new business premises for the Bank of Victoria, situate on the site of the old Melbourne Club-house, in Collins-street, occupying a frontage of 66 feet, with a depth of 140 feet. The principal façade is of two lofty stories, with mezzonine above the ground-floor for stowage of stationery, &c. The teller's room is a rotunda of 60 feet diameter, at the back lighted by a dome of iron and glass, 35 feet 6 inches diameter, and 35 feet to the springing. This dome is carried by a circular iron girder, weighing 11 tons, supported by eight bluestone columns. The architecture is mixed; and the elevation by no means equals the expectations raised by the design which secured the first premium. Whether the architect, Mr. A. P. Smith, has been compelled to alter, we know not; but certainly we are disappointed. The original contractor failed about three months since, and the work is now being carried out by Messrs. Lawrance & Cain. The cost will be about 25,000*l.*

Messrs. Lawrance & Cain have also in hand a very large wool warehouse, at the corner of Bourke and William Streets, for Messrs. Goldsborough & Co., of which Mr. Gill is the architect. This building will be the most complete of its kind. The sale-room will be fitted up as a small amphitheatre, with seats, book-boards, &c. It is erected almost entirely of bluestone, the floors being as near as possible fireproof. The cost will be about 15,000*l.*

Mr. F. M. White is also enlarging Messrs. Clough & Co.'s warehouse, in Collins-street, so as to keep pace with Messrs. Goldsborough's new warehouse.

We understand that Messrs. Murray & Co., of this city and Glasgow, have entered into a contract with the municipal council of Prahran (one of the suburbs) for the supply of a clock with four 8-feet illuminated dials, with bells for the hours and quarters. This must prove of great value to the locality, and is further evidence of the plucky spirit of the council. No other council can boast of such a townhall, and the clock will eclipse all others in the colony. The architects, Messrs. Crouch & Wilson, have received instructions to make the necessary alterations in the tower for the reception of the clock at a greater height than was originally intended, and also to stucco the tower down to main cornice of building.

Mr. Webb is calling for tenders for transepts to St. Luke's Church, Emerald-hill. A Wesleyan church is being erected at Hamilton, about 150 miles from Melbourne, from designs furnished by Messrs. Crouch & Wilson. It is of brick, and may be classed as in the later period of Early English. The cost will be about 750*l.*, with accommodation for about 300 persons.

The opening of the railway to Ballarat has given some impetus to building operations there, at least in one or two instances. Bath's Hotel, originally a very large hotel of wood, and doing the largest business in Ballarat, is being pulled down piecemeal to give place to a larger and more beautiful structure in brick, which, when completed, will be the largest hotel in the colonies.

The Board of Agriculture, some month or two back, offered a prize of 50*l.* for the most approved design of homestead and farm buildings for mixed husbandry on farm of 160 acres. To this appeal seventeen designs have been sent in, which have been referred to a committee, who are to report on the 2nd proximo.

Melbourne.

* By Mr. Vincent Wing.

DETACHED MEMORANDA AT THE INTERNATIONAL EXHIBITION.

The Sanitary Permanganates, or "Condy's Patent Fluid."—Among the British products at the International Exhibition (Class Second; Chemical Substances, &c.) are various salts of manganic and permanganic acid, exhibited by Mr. H. B. Condy, of Battersea, practical chemist, who has obtained a medal for their manufacture from the Royal Commissioners. These salts, the permanganates particularly, are of special sanitary interest, as deodorizers and disinfectants, and for other hygienic purposes, and are getting into extensive use; being employed by nearly all the more important Government departments; by medical men in hospitals; and amongst the sick in private dwellings. We have occasionally pointed attention to the importance of the alkaline permanganates for sanitary purposes, and as an excellent vehicle of oxygen in the ozonic state; which they readily give off, as in the cleansing of wounds; the purification of sick apartments; for toilet and many other purposes, and even for internal use as purifiers of potable water, restorers of tainted food, &c. Dr. Angus Smith has made use of the alkaline permanganates as a test of the impurity or purity of air in towns, and Miss Nightingale has recommended their use for this purpose in hospitals. We are glad to observe that a special instrument for these purposes, and also for testing the purity of water, is exhibited by Mr. H. B. Condy in a case opposite to his, and belonging to Messrs. B. Condy, Mitchell, & Co.; his own space being rather restricted in its limits.

Limousine Iron.—This material, exhibited in Class 31, by the "Patent Enamel Company," is intended for the interior and exterior decoration of buildings. The process enables architects to introduce their own designs in coloured ornamentation, very permanent. These tablets or panels are of wrought iron, covered with a hard silicious glaze, in and under which the ornaments are fused at nearly a white heat. They are washed clean by every shower of rain. The specimens in the Exhibition are imperfect, and are placed there merely to show the material.

Messrs. Lambert's Brass and Iron Fittings.—Though not attractive to the general observer, many of our readers may find advantage in looking to the "Walsall Court," Class 31. The "patent welded wrought-iron tubes and fittings, and malleable iron fittings," are made for gas or low-pressure steam or water, of from one-eighth to four-inch bores: they are also made for high-pressure steam or water, and proved to a pressure of 200 lb. per square inch. The ordinary gas-pipe is proved to 75 lb. on the square inch. Messrs. Lambert manufacture coils to any configuration, and of any size or length. There are two small ones shown in the Exhibition, one bent hot, and welded into one length; the other a small model of hot-water coil, bent cold in one piece, about 40 feet lineal, shape circular spiral. Their pumps, stand-posts, and other articles, which are not shown in the "Walsall Court," owing to the insufficiency of space allotted to it, are exhibited in the compartment occupied by Messrs. Thomas Lambert & Son, of Lambeth.

White Tiles.—The Italian roofing tiles exhibited by Fison & Co., in Class 10, have received "honourable mention." They require no mortar in laying, and form a roof of agreeable appearance, and of great coolness in summer. Their kiln tiles, for drying malt, give great draught, with 1,296 holes per square foot, and seem very strong.

Gas Fittings.—Mr. Hulett's case, Class 31, is in such an awkward corner that some may overlook it. Most of the articles exhibited have been designed and executed expressly for the Exhibition, and deserve notice. His Elizabethan and Italian designs are better than those he exhibits of Mediæval fashion. An arrangement for removing stoppages in pipes; and a new pipe vice, which holds the pipe without splitting it, add to the value of his useful general collection.

Engraving by Electricity.—Some will have noticed the machine in Class VII. for engraving the cylinders, of copper or brass, employed in the printing of woven fabrics and paper-hangings. Its distinctive feature is in the application of voltaic electricity in communicating certain necessary movements to important and delicate portions of the apparatus. The cylinder to be en-

graved is first coated on its outer surface with a thin film of varnish, sufficiently resistant to the continuous action of the strongest acids. The requisite number of copies of the original design are then traced or scratched simultaneously by a series of diamond points, which are arranged on the machine parallel with the axis of the cylinder. Each diamond point is in correspondence with a small temporary magnet; and the entire series is so arranged *en rapport* with the original design, which had been previously etched on a metal cylinder filled in with a non-conducting substance (this cylinder being made to revolve in contact with a tracing point) that when the electric current passes, intermittent currents are established, whereby the diamonds are withdrawn from their work at the proper intervals. The metallic surface is thereby exposed in certain parts; and a bath of nitric or other acid being afterwards used to etch or deepen the engraved portion, the operation is completed. By means of this apparatus, engravings may be enlarged or diminished to any necessary extent from the same original.

RAILWAY MANAGEMENT.

EACH month's experience shows that our present system of working railways is fraught with danger. Terrible accidents follow each other in rapid succession: lives are lost, limbs are broken, and numbers of changes in the management of working must be introduced.

In many instances it has been found that the signals have proved insufficient. Sometimes the machinery has failed—the electric wire has not rightly done its work; and on other occasions lives have been lost and serious damage has been caused by the neglect of ill-paid and ignorant signalmen, who are quite unfit for positions of so much consequence. Besides, the engine-drivers are at times worked for so many hours that it is scarcely to be expected that even the strongest men can give right attention to their business. But, dangerous as are all these arrangements, we believe that a still greater source of mischief is to be found in the despatch of trains in too rapid succession, and in the want of punctuality in the time of the arrival of the trains at the different stations.

As regards the last great accident at Market Harborough, numbers of persons have been more or less injured. Three are dead at the time of writing; and, at the present time, it is not possible to say how many more cases may end fatally. We had scarcely time to publish the remarks in course of which we expressed our disapproval of, and fear of the risks attendant on, the Great Northern management at King's-cross, when the account of this accident appeared in the papers.

From the best information to be had at present, it seems that two Exhibition excursion trains were advertised to start at the same time, 7.30 p.m., on Thursday night, from the King's-cross Station of the Great Northern Railway. It is stated, however, that the first of these trains did not depart from King's-cross until a *quarter to eight*, and that the other one followed in about *five minutes after*.

The destination of the first train was Burton; but, in order to perform this journey, the Great Northern line should have been kept through Market Harborough for Knighton Junction, a few miles from Leicester, where it would then get on the Burton line. The other train was destined for Leicester and Peterborough. At the Harborough Station the first or Burton train stayed for a few minutes to take in water; and, in the inquiry into this matter which will be made, it will be very important to know the exact time of this stoppage, and of the arrivals of not only this but also the other train at the various stations; and compare these with the times at which they had been noted to arrive, on the printed time-tables. We would by this means be perhaps enabled to judge of the distances which had been kept between the two trains; and it may perhaps be shown that at other points the danger was imminent.

In course of time we look to know all about the signals at Harborough, and also at the next station nearer to London; where it should have been known that the Burton train, which at the most was only five minutes ahead, was waiting to take in water: it was 10.55 when the Burton train stopped.

An eyewitness says that, when stopping for water at Bedford, the Burton train was seen going out of the station as the Leicester train neared it. On proceeding again, the same pace was preserved, until within a few miles of Harborough, when the Leicester train slacked speed. The sky was thick, approaching to a state of fog; and before the water-supply had been completed at Harborough, the Leicester train ran with tremendous force into the Burton carriages. For some time before collision, the Leicester engine continued to give forth sharp, short, rapid screams; then came the crash of the concussion, which smashed the hindermost carriages of the Burton train, and threw the passengers about in all directions.

These fatal and frequent railway accidents give convincing proof of the danger to which the millions of persons who travel by railway are constantly exposed: and show not only that the most searching inquiry should be made respecting the cause of each collision, &c.; but that it is necessary that the whole matter should be gone into with the greatest care by a responsible commission, composed of men eminent in science, — persons of general intelligence and shrewd common sense, and but a few only who are directly interested in railways and their management. By such a competent jury, the various improvements which have been suggested respecting signals, and the manner of working them, should be well studied; and, if it be found that there are means by which the loss of life and damage of limbs can be avoided, considerations of expense should not be allowed to stand in the way. In connexion with various kinds of machinery, we have noticed that the cost of changes which have been clearly shown to be beneficial, has prevented them from being carried out. We have seen how slow those interested in the old method of manufacturing steel were to appreciate the method introduced by Bessemer; and how in coal-pits the single shaft, in spite of many warnings, has been kept so long in use. There are other similar matters to which we might refer; and it may be found that the same is the case in connexion with railway signals.

THE OXFORD WORKHOUSE COMPETITION.

THE report of the building committee was read last week at a special meeting of the local guardians. It unanimously recommended the adoption of Mr. Fisher's design, marked No. 1; that 25*l.* be presented to each of the unsuccessful competitors; that the successful plans be at once forwarded to the Poor Law Board; and that, when approved, they be exposed to public view with the other plans, if the respective authors permit. The several recommendations of the report were agreed to by the meeting, who authorized the committee to advertise for tenders, approve of drafts of contracts, and appoint a clerk of works, subject to the approval of the board.

In the course of the discussion on the report, it was stated by the chairman that Mr. Wilkinson's estimate was 8,200*l.*, the bricks being made upon the ground; Mr. Bruton's, 8,500*l.*; and that Mr. Fisher merely said his plan could be carried out within the sum of 9,000*l.*; but when he attended before the committee, he said that he was satisfied that it could be erected for 1,000*l.* more than his former plan, which was 7,500*l.*; so that his estimate might be taken as the same as Mr. Bruton's, namely, 8,500*l.* Mr. Bruton's foundation was 4 feet deep, and Mr. Fisher's and Mr. Wilkinson's 3 feet.

The Rev. C. H. Cholmeley said, one fault which had struck him in Mr. Fisher's plan was the narrowness of the bed-rooms, which were only 16 feet 6 inches, and consequently only allowed 3 feet 6 inches between the beds and those opposite to them. On referring to the other plans, however, he found that they were either the same width or half a foot less. In the arrangement of the various yards, and the supervision of the officers, he agreed with the committee that Mr. Fisher's plan was decidedly the best. There were many things in Mr. Wilkinson's plan which he liked, such as the separation of the able-bodied and the old men and women into a greater number of dormitories, and the general plan of the infirmary. In those respects he thought Mr. Wilkinson's plan was preferable to the others.

THE PARIS UNIVERSAL AND PERMANENT EXHIBITION.

MOST readers have heard that a project for forming a permanent Universal Exhibition in Paris has been received with favour by the Emperor; but many will probably hear with surprise that the building is in progress. It is situate at Auteuil, close to the road and railway, and just within the ramparts. The enterprise is undertaken by a company. The estimated cost of the building (illustrations of which we give in our present number) is 600,000*l.*, the whole of which has been subscribed in France. The object is to found a place of resort for producers, dealers, and customers from all parts of the world, where commodities may be compared and purchased under one roof,—an arrangement which will afford great facilities to all parties. The shareholders are to be reimbursed by the rentals charged to exhibitors, and the public will be admitted free on at least five days of the week.

The building is situate on an irregular-shaped plot of ground, bounded on one side by the new railway, on another by the road to St. Cloud, and flanked by the ramparts. The main building will consist of an open nave, running north and south, presenting a clear and uninterrupted space of 1,050 feet long, 130 feet wide, and 110 feet to the crown of the semicircular roof, which springs at a height of 35 feet from the floor-line. This nave will be intersected by a transept of equal width and height, 550 feet in length, above which a dome will rise to a total height of 345 feet. The domes of the London International Exhibition building are 250 feet in height. On each side of the nave there will be aisles, 100 feet in width; and again, on the west side, two supplementary aisles of equal width, but of varied length, planned in accordance with the site. Over all these aisles, at a height of 25 feet from the ground, galleries will be constructed. The total length of the building externally will be 1,315 feet. At the south end, quite detached, and yet connected with the main building by corridors, will be a polygonal saloon, 222 feet in diameter, and 115 feet in height. With its gallery all round, it is calculated to hold 10,000 persons.

A machinery annex, 600 feet long and 100 feet wide, partly shown in our plan, will occupy the north-east corner of the ground; and near the music saloon will be erected two buildings, of iron and glass, to be used as winter gardens.

The architect is Mr. Liandier; the contractor, Mr. Edwards; and the iron castings are being made in Glasgow by Messrs. T. Eddington & Son. The London agency, we may note, is at 27, Leadenhall-street.

The *Constitutionnel*, speaking of the undertaking, says:—

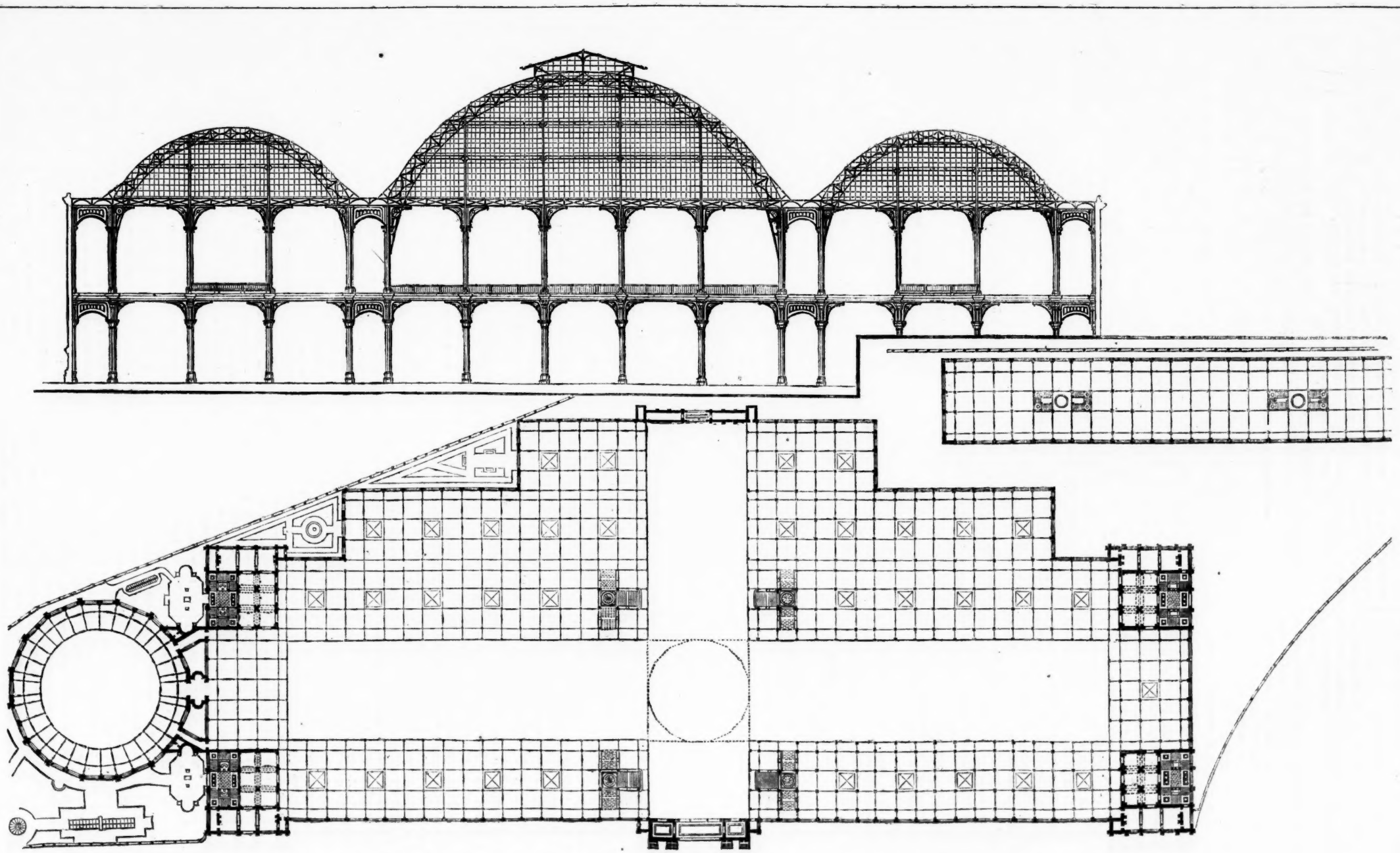
Within the precincts of new Paris, in the flourishing district of Auteuil,—where Boileau gave poetic counsel to his gardener; where Molière composed his *chefs d'œuvre*, in the company of Racine, de la Fontaine, and de la Bruyère,—Industry, the queen of our epoch, is raising at this moment a palace to modern genius. Its aim is to place upon a new footing, exhibitions, the utility of which is incontestible. They began by being exclusively national and temporary. From being national they became universal. Henceforth, the products of science, the arts, industry, agriculture, and commerce will find a place in an universal and permanent Exhibition. The splendid palace now building at Auteuil proves that the idea is leaving the realms of theory and approaching realization. Let us first examine the practical advantages of the scheme; we will then describe the building and its workmanship.

Persons are fond of repeating that distance is annihilated; that frontiers are disappearing; and that modes of international communication are being multiplied. It is true. They delight in exalting the marvels wrought by the union of science and labour, the great modern discoveries, the admirable inventions of industry,—and with good reason. But it is of the utmost importance to develop all the branches of human activity, and to expedite commercial transactions. The universal and permanent Exhibition offers these advantages; for its object is to bring together the producer and the consumer. It will save one numberless researches, often unproductive. To the other it will offer a continual stimulus, and place at his disposal, objects, from all quarters, of which he has need.

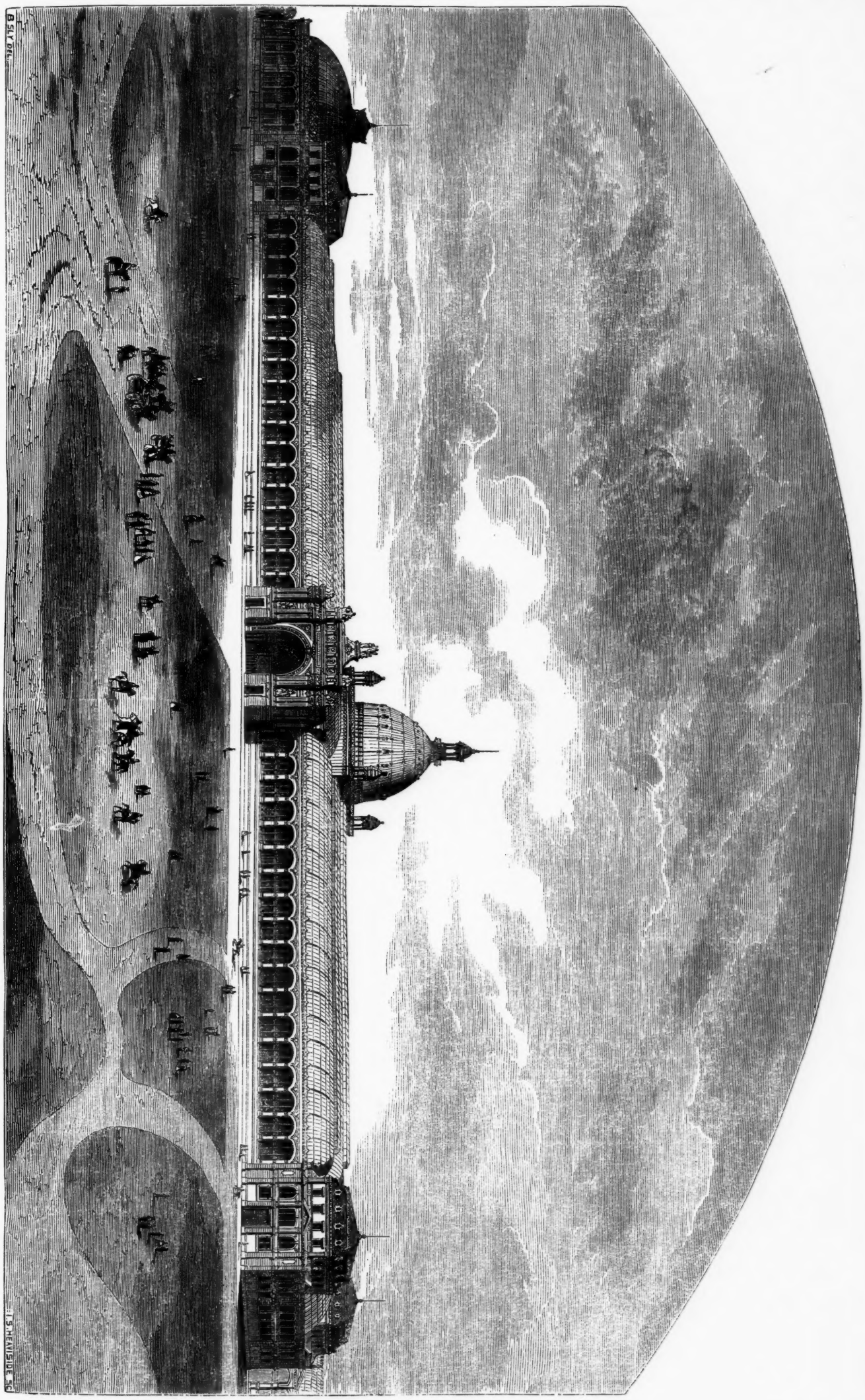
The programme is headed with words which were uttered by an august personage on a solemn occasion. 'Approach all you who think that the progress of the agriculture, the industry, and the commerce of a nation contributes to its general welfare; and that the more reciprocal intercourse is multiplied, the more national prejudices will be effaced.'

A considerable quantity of space, we are told, has been already applied for; and it is hoped that the building will be inaugurated early next year.

SOUTH KENSINGTON MUSEUM.—During the week ending 30th August, the visitors numbered 39,037.



THE PARIS PERMANENT UNIVERSAL EXHIBITION.—*Plan. Cross Section at narrowest part, on larger Scale.*



THE PARIS PERMANENT UNIVERSAL EXHIBITION.—MR. LIANDIER, ARCHITECT.

SANITARY LAWS *v.* CONTAGION.

FOR some few years past, in the anxiety to promote sanitary progress, a disposition has perhaps been shown to overlook the action of contagion in connexion with certain fatal disorders; but, just now, there is evidence of reaction in this matter, which may err in an opposite extreme; and, to some extent, be the cause of leading attention from those means which are available to stop the attack and spread of pestilence.

When considering this important question, it would be desirable, in the first instance, to ascertain what contagion really is. On this point eminent medical authorities differ in opinion. It may be that contagion involves the presence of a distinct matter, which, being generated, is moved by peculiar causes to spots which are suitable to its nature and adapted to the spread of the disease. Birds of prey scent carrion from a long distance. They pass over the untainted fields for miles, until they come to the place in which the object of which they are in search lies. In like manner the pestilence moves in the air, passing over neighbourhoods which are in such sanitary condition as not to be suitable to its tastes, to others in which it may banquet through the foulness and pollution caused by neglect.

In a recent article in a contemporary (*Chambers' Journal*) on the "Yellow Jack" of the Southern American States, it is stated that the yellow fever has visited New Orleans once in three years, on an average, for half a century. It has desolated the banks of the Mississippi, at times as high as Memphis. On the Atlantic seaboard it was terribly fatal; and formerly paid occasional visits to Philadelphia and New York. Before, however, considering the operations of this disease, it is worth while to glance at the rates of death in the different hospitals in New Orleans. In Tuoro Infirmary, the deaths from yellow fever have been 40·72 per cent; in the Lurenberg Hospital, 52·66 per cent.; and in the hospitals of the Board of Health, 33 to 47 per cent. An inspection of those institutions would show sufficient reasons for this variation in the death-rate.

In one season, in which the deaths in New Orleans from yellow fever were 7,011, there were 3,569 Irish among the victims, and 2,239 Germans: in all, 5,808: leaving only 1,203 deaths amongst the people of the city and other nations. The acclimation of persons, both natives and foreigners, is required for safety against this scourge; and it is said that, in order to escape contagion, it is necessary to have passed through the disease—to have had something like inoculation; and it is asserted by some that it is a contagious disease, carried from place to place, like the plague or small-pox; and that it cannot be shown that it arises spontaneously in any part of the United States. This, however, seems doubtful. In the vast swamps and luxuriant foliage of those districts there is the proximate cause of this fever, and other disorders which prevail there; and as population and civilization advance, as the land becomes distinct from the water, and the wide ranges of damp ground are made firm by cultivation and the occupation of man—provided that proper sanitary provisions are made—"Yellow Jack" will become one of the things of the past. The same process, as regards health, is now going on in the Lincolnshire Fens and some other parts of England.

In many parts of this country there are traditions connected with cathedral buildings which are similar in many places. We refer to the stories of the "Apprentice's Pillar," the legend of the monk who threw himself from the top of the church tower with a bag of money in his hand, and others. And quite as common, and no less unfounded, are the accounts of the plague and fever being caused by the opening of a bale of goods. In connexion with the great pestilence of 1665, it is said that the disorder broke out at the top of Drury-lane, by the opening of a bale of goods which had been brought from an Eastern city. After looking at all the accounts which can be found in connexion with this visitation, it does not seem that there is any proof of this having really occurred; and our readers know that in the reign of Charles II. Drury-lane was an undrained and unwholesome suburb—just the place where cholera, or any other epidemic disorder, might be expected. In the same ship which is said to have come from the plague-stricken land, there must have been many other packages; and it seems singular that, if the pestilence is to be attributed to this cause, the outbreak did not happen nearer to the Thames, where the cargo must have been unloaded.

In the New Orleans district of the Southern American States, although, as usual, the physicians differ, there is a belief that the yellow fever comes from Vera Cruz, or Havana, in the ships; and there is faith in the conveyance of the disorder in trunks and pedlars' packs into the villages. A case is reported of the fever having broke out in a house which had been visited by a Jew pedlar in the neighbourhood of New Orleans. This might have been an incidental occurrence; and, in order to render it worthy of consideration, we should have traces of the actual conveyance of the disorder to the other portions of the wide region over which the fever has spread; we should be also assured of the sanitary purity of this house and village. It is reported that in Philadelphia and New York "Yellow Jack" has not lately prevailed; and this is by some attributed to the strict quarantine regulations which are enforced. But, if the pedlar's-pack-and-package theory is to hold good, the quarantine would prove totally useless; for thousands of articles from the infected districts, in the ordinary course of traffic, must have found their way amongst the Northern population of America from the cities of the South.

It is related that, a few years ago, a ship arrived from the West Indies at New York. One day, when the hatches were open, as the ship lay at anchor in the Narrows, the wind blew a faint, sickly odour into a village on the shore of Staten Island. In a few days there were a large number of cases of yellow fever, and twenty-one persons died; a mob rose up, burnt the quarantine hospitals, and eventually the place for the detention of ships was removed to a greater distance. When we consider the contents of the holds of many ships, which, closely packed, are exposed to the heat of the tropical seas; when we think of the stagnant and putrid "bilge-water," which is often allowed for months to remain in parts of the hold, it is not surprising that, when the hatches are opened, there should rush out of the interior of the vessel poisonous emanations sufficient to account for any outbreak of preventable disease.

The plague still rages in the cities of Turkey and other portions of the east of Europe and elsewhere; the yellow fever ravages the Indies and the South American States; yet, notwithstanding that fleets of ships have been constantly passing from those ports to London, Liverpool, &c., we have had no attack worth naming of either plague or yellow fever in England; we have, however, an amount of sickness and death at home which it requires all our care and exertion to lessen. In the City, Dr. Letheby complains of an epidemic fever which is the cause of a large amount of death. In connexion with this, the authorities of the London Fever Hospital say that the first cases brought there were tramps in very bad circumstances; but we know that the fever has proved more fatal to families in good circumstances than to the very poor. As regards this epidemic, it is necessary that careful inquiry should be made, in order to determine to what extent the deaths which have occurred are to be attributed to unsanitary causes, and what foundation there exists for the idea that the disease has been propagated by what is called contagion. There must, to a certain extent, be danger from living in the atmosphere of all kinds of disease; but long experience and careful general observation have shown that far more good is to be effected by enforcing sanitary laws than by any quarantine regulations.

From time to time we have given facts in proof of this, and many others might now be stated; we must, however, just now conclude with the following notes, which, as regards one disease, very much confirm the views we have many times expressed. In connexion with the outbreak of cholera in the Soho district, in 1854, there is no evidence of the spread of this disorder by contagion; for the medical man who, in Soho, succumbed to this illness, had taxed, more than nature could bear, his energies in attending to the sick; besides, he had spent hours in the pestilential houses in which the disease had been generated. In the hospitals to which many hundred cholera patients were carried, the proof of noncontagion was very evident. Take, for instance, the Middlesex Hospital, which was the nearest to the infected district: into this building, on Friday morning, the 1st of September, between eight and nine o'clock, 10 patients were admitted; the influx continued great during the whole day—22 being the number before midnight; but on the following day it was worse: 53 new cases were carried in. The cabs bringing them followed each other in almost constant succession; sometimes one cab would contain two or more of a family, frequently parent and child; several were brought from a house in which more than ten persons had been seized. On Sunday, the third day, towards evening, 91 persons had been admitted—nearly a patient every half hour. All these were cases of true cholera; besides, numbers of cases of choleraic diarrhœa were prescribed for to out-patients. At first the mortality was frightful, and by the time mentioned, 48 out of the 91 had died. There was a difficulty in getting the bodies of the dead removed; and at one time there were not fewer than 40 corpses in the dead-house. At length the parish authorities brought furniture waggons in the night, and carted off the uncoffined bodies, in tens at a time, to their own places. Other hospitals began to receive the sick; but at the Middlesex institution patients were admitted to fill the place of others as rapidly as they died. Between Sunday and Monday, 33 additional patients were taken in, making the total number in four days 124, the deaths being now 55. Up to the 16th of the month the total number received was about 160, and the proportion of deaths has been calculated at 7-12ths. For some time after this, cases came in; and it is worthy of particular remark that on the admission of the cholera cases into this hospital they were *distributed over all the wards*, medical and surgical, among the common patients. In the midst of all these death-stricken people, the medical attendants, sisters, nurses, and all connected with the place, most unflinchingly performed their duty,—notwithstanding the miserable conditions of those wretched people, many of whom were brought from the most filthy and miserable dwellings; there were also respectable mechanics and workmen. But in connexion with all, the assistants never flinched from their unpleasant duty,—male servants as well as females, down to the solitary engineer, working apart, and remaining at his post, of his own accord, till three in the morning, keeping up the supply for warm baths. All laboured willingly, and without a sign of fear from contagion.

The work of the male servants was most exhausting; and, although high wages were offered to strangers to relieve them of part of their heavy duty, none could be found to undertake the office; and the same difficulty was experienced in connexion with the nurses.

The importance of preserving the health of the sisters and nurses was evident; and the matron adopted the plan of sending them off in cabs, in parties of about ten, to the outskirts of the town, for a few hours every day: some to Hampstead Heath, with their dinners; others to the Zoological Gardens, or to Primrose Hill; nutritious food and stimulants were also ordered by the physicians. During all these exertions, diarrhœa attacked several of the attendants; but this was speedily remedied; and, notwithstanding that the admission of those cholera patients would to a certain extent cause a state of atmosphere which would predispose those in the wards to be attacked by the disease, there was only one case of cholera reported, and this was on the 5th; and this patient was admitted five days before the outbreak, ill with a disease which would render her liable to an attack of this nature. On the 11th of the month, a nurse, who had been recently hired for the occasion, was seized, and in a short time died. Two days afterwards a second nurse was attacked, who was in some danger, but recovered. Up to the 16th, all the cases which had been originated in the hospital were three then; and when we note these effects, and consider the large number of persons who were within the walls of this hospital exposed to contagion, and observe that, so far as we know, no deaths happened to those who were engaged in removing the bodies of the dead, and that similar results were shown in other hospitals, we think that the non-contagious nature of cholera is evident.

Even with known contagious diseases there is no doubt whatever of the good effect of sanitary precautions. We trust, therefore, if it should be found necessary to enforce some quarantine regulations, that we shall not relax in our exertions to avoid pestilence by the making of sanitary improvements.

CHURCH-BUILDING NEWS.

Penmachno (*North Wales*).—The church of Penmachno, which has been rebuilt from the designs of Messrs. Lloyd, Williams, & Underwood, of Denbigh, architects, stands in the beautiful valley of the Machno, and is surrounded by picturesque mountain scenery. The structure is in the Early Decorated style, and will accommodate about 300 persons. Little ornament has been introduced. The nave is about 60 feet by 20 feet; chancel, 24 feet by 16 feet; transept, 16 feet by 16 feet; vestry, 12 feet by 10 feet; and north porch,

7 feet by 7 feet. The walls are of the light grey stone of the neighbourhood, with dressings of freestone. In the chancel arch the light grey stones alternate with voussoirs of slate. The windows in the side walls of the nave and chancel are single lights: the east and west are three-light geometric windows. A bell-cot rises in the west gable of nave. The woodwork throughout is stained and varnished. The roofs are open, and plastered between the rafters. The floor of chancel is of buff tiles and red and lilac slate, geometrically arranged. The ironwork is all worked by hand. The east window has been filled with stained glass, by Messrs. Ballantine & Son, of Edinburgh, in memory of William Morgan, D.D., Bishop of St. Asaph in the sixteenth century. In the centre light is a figure of John the Baptist; in the dexter light, St. Peter; in the sinister light, St. Paul; and in the large trefoil, in tracery, is represented the Ascension.

Tranmere (*Birkenhead*). — A new Wesleyan Chapel has been opened at Tranmere. The edifice stands on an elevated spot in Church-road, Higher Tranmere. The style is Gothic modernized, and adapted to the general shape of the building, which is octagonal. The chapel is built of brick, faced with Stourton stone. In front of the chief entrances there is an open porch, supported by seven arches. At each end of these is a spiral staircase, leading to the galleries. The roof, which is octagonal and self-supporting, is surmounted by a lantern and spire. There are sixteen windows, of cathedral-tinted glass, with a crimson marginal border. The corners are finished with gurgoyles of various devices. The basement contains a school-room 60 feet by 37, capable of accommodating about six hundred pupils; and also two large vestries. There are also three vestries above. A platform is substituted for a pulpit. The roof is an open foliated one. The height from the floor to the apex is about 60 feet. Eight chandeliers, in blue and gold, are suspended over the inner circumference of the galleries. The chapel is capable of accommodating about 1,000 persons. The cost of the structure, including the land, is about 4,000*l.* The architect was Mr. Walter Scott; and the builder, Mr. John Hogarth, of Rock Ferry.

Birmingham.—The Moseley Congregational Chapel has been erected here, from the design of Mr. Edward Holmes. The internal dimensions are 77 feet by 45 feet 6 inches, with galleries on each side; and at the west end sittings are provided for 860 adults and 170 children. At the rear are two vestries. The building is heated by Haden's apparatus. The builder was Mr. C. Jones. The principal elevation has a central entrance under two arches supported on columns with carved caps. On each side are the staircases, surmounted by octangular turrets 70 feet high. The front is recessed back over the principal entrance between the turrets and a range of double lancet windows formed in the west wall. The sides are divided into seven bays, and have two tiers of double-pointed windows. There is a large wheel window at the east end over some enriched arcading at the rear of the pulpit. The style is an adaptation of Early English to the materials used in the erection, viz., red bricks for the walls, with blue and white brickwork in patterns and arches, and Bath stone for the dressings. The roof timbers are partly exposed, and, with the open benches, are stained and varnished.

Denstone.—All Saints' Church, Denstone, has been consecrated by the Bishop of Lichfield. Denstone is a parochial district formed out of the parishes of Ellastone, Alton, and Rocester. Mr. T. P. Heywood, of Dove Leys, has supplied this new parish not only with this church, but also with a school-room and school-house attached, and a parsonage. The church in plan is simple; nave, porch on south-west side, chancel ending in a three-sided apse, and on the north side an organ chamber and sacristy: on this side there is also a circular turret containing four bells. The altar, to which the ascent is by six steps, stands forward in the apse. The reredos presents a combination of different-coloured marbles, and in the centre a bas-relief of the Crucifixion in alabaster, to which colour has been added. The chancel is higher in its roof than the nave. The apse windows, each of two wide lancets, are placed high, and are filled with stained glass, by Messrs. Clayton & Bell, as indeed is every other window in the church. The west window is a large circle: four simple lancets give light to the north side of the nave, and three windows (of three lights) to the south side. The pulpit is circular, of alabaster, with marble shafts, and inlayings of coloured marbles. The same materials have been used for the chancel screen.

Stutton (*Suffolk*).—The church here has been reopened, after having undergone a reparation and enlargement. Originally there was a gallery at the west end, almost close up to the low ceiling, which had the effect of partially blocking up the west window. The removal of this gallery gives the place a much lighter appearance. The ceiling of the nave and chancel, which was low and flat, of lath and plaster, has been superseded by a new ribbed ceiling. The chancel arch, too, is new, the corbels of which were sculptured by Mr. Frewer, of Ipswich. The door in the north wall, opposite the porch, has been removed, and a window introduced in its stead. All the windows are of stained glass. Most of them are *in memoriam;* several of them in memory of relatives of the present rector, the Rev. T. Mills. The north transept is entirely new. There is a coloured window at the end, presented by Lady Middleton. On each side wall are two lancet windows, also of coloured glass. The roof is ribbed. The benches are of stained deal, with poppy-head endings, carved by Mr. Ringham, of Ipswich. The whole cost of the alterations is about 700*l.*, the greater part of which the rector provided. Mr. R. Hawkins, of London, was the architect; Mr. H. Luff, of Ipswich, the builder. The rectory-house is of red brick, with ornamental gables. It stands not far from the entrance, on a slope which runs down to the river Stour. The grounds, though not large, contain a few notable things. There are three fine cedars of Lebanon, the largest measuring 16 feet 5 inches, 3 feet from the ground. A cypress measures 6 feet 4 inches, 3 feet from the ground. A large Scotch fir has a girth of 11 feet, a silver fir of 14 feet 4 inches. A group of five ilex, the largest being 9 feet 3 inches in circumference, are supposed to have been the first seed from the first tree brought over by Cavendish, and planted at Trimley. There is also an avenue of Irish yews. The Rev. Tobias Rustat, rector here 100 years ago, nephew of the master of the robes of Charles I., planted most of the trees. Three tulip trees also attract attention, and a Portuguese laurel has spread so enormously, as to show a circumference of 270 feet: it has to be cut every year.

Ipswich.—A meeting of the inhabitants of St. Lawrence's parish was recently held, for the purpose of examining a plan submitted by Mr. R. M. Phipson, for making alterations in the interior of the church. It is proposed to remove the gallery at the west end, and the pews in the body of the church, and to replace the pews with benches and stalls. The plan, by which it is calculated that the nave of the church will seat about 220 persons, was unanimously accepted; and Mr. Phipson was instructed to advertise for tenders for carrying out the work.

Sutterton.—The church at this place, on which restoration has been going on for some time, is now drawing towards completion, according to the *Lincolnshire Chronicle.* The contractor for the work is Mr. Bradshaw, of Stamford. Mr. W. Hilliam, of Stamford, has executed the various stone carvings. Mr. Beeby, of Sutterton, plumber, has done the fittings of the windows and other work. The chancel has been rebuilt, with a new oak roof. The window to the east is in the Early English style. It is at present filled with stained cathedral glass, but is expected to be replaced with stained glass *in memoriam.* The side windows are also filled with the same kind of glass, and floor laid with Maw's encaustic tiles. Joining the chancel, on the south side, a new part has been added, called Massingberd's aisle, in which the organ will be placed, The south transept has been rebuilt, with an Early English window, with moulded bases, necking, and caps, surmounted by a wheel window and a carved cross, stone copings, and glass to match the chancel windows. Next to the south transept is a new tower, with a spire, carved finial, and octagon staircase leading to the belfry. The south aisle is also new, with the Gothic windows restored. The north aisle has been rebuilt, and the old Norman doorway preserved. The north transept has been repaired, and the Perpendicular window restored and glazed the same as the chancel windows. The sacristy has also been rebuilt, and a new porch erected. The whole building has been surrounded with a parapet. Inside, the columns and old walls have been cleaned and fresh pointed, and the old roof stained. The old seats are retained; whilst new open seats, with carved ends, are placed in the north and south transepts, thus giving additional sittings. The floor of the church has been lowered 18 inches. The ground round the outside of the church has been cleared away for a more effectual drainage of the building; and the part asphalted, draining into a gutter of York stone. The principal stone used has been from the quarries of Ancaster and Clipsham. Mr. Browning, of Stamford, was the architect employed. The Rev. C. A. Moore has expended 700*l.* on these works.

Whixley.—The parish church has been reopened, after having undergone extensive alterations, under the architectural superintendence of Mr. Scott; Mr. Dalby being clerk of the works; Mr. J. Freeman, of Staveley, builder, being the contractor for the masonry and the joiner's work; and Mr. Hodgson, of York, the plumber. The alterations were commenced rather more than twelve months ago, and consisted in the construction of a new roof, new windows, re-stalled sittings, new organ, new altar-table, vestry, &c. In addition to these, a new porch of oak, covered with tile, placed on the hill or eminence approaching the church, has been built, bearing on each end quotations from scripture. The restorations have cost upwards of 3,000*l.*

Owston.—The church here has been partially restored, according to the *Doncaster Gazette,* and a new organ provided. Mr. Teale was the architect employed. The restorations as yet carried out are confined to the nave and north and south aisles or chapels. The nave has a groined roof. At the western end of the building beneath the tower is a gallery which contained an organ. The removal of this instrument has revealed a feature of the architecture. In scraping the walls two Norman lights were found in the inner wall of the tower. The whole of the eastern wall of the tower is totally different in the style of its architecture from the others, and it is thought to be the most ancient part of the edifice. The Norman lights have been opened out, and may be seen from the body of the church. The walls have all been scraped and re-plastered. The pillars and arches have also undergone renovation in this respect. Outside, an accumulation of earth has been removed at the west end. The work in the church has been done by Mr. Barker, of Carcroft, and a vestry has been put up by Messrs. Wood & Son, of Doncaster.

Helmsley.—The Archbishop of York has consecrated the new church at Harum, which has been built at the sole expense of Lord Feversham. It is in the Early English style, from drawings by Messrs. Banks & Barry, of London. Mr. W. Barton, of Helmsley, was the mason.

Harrogate.—The Congregational Church was opened on the 13th of August. It is built in the Decorated style. Messrs. Lockwood, Mawson, & Mawson are the architects. The length of the church is 72 feet, the width 42 feet 2 inches, and the height 38 feet 6 inches. There is a five-light window with geometrical tracery above the two front entrances, which are trefoiled. The spire rises to a height of 130 feet. Behind the church, and at right angles to it, is the Sunday school, which contains one large room and three class-rooms.

West Hartlepool.—New galleries and an organ have just been added to the Congregational Church, which was erected seven years ago. The whole of the interior has also been undergoing a thorough renovation. Mr. Oliver was the architect in both instances.

Holy Island.—The church of Holy Island (says the *Newcastle Courant*) has been re-opened for divine worship after restoration. The Lord Bishop of Durham gave a discourse, referring to the history of the Holy Island Church for the past 1,200 years, and its restoration for public worship.

Berwick-upon-Tweed.—A new church is about to be built at Berwick. It will cost 2,000*l.*; and of the sum, 1,100*l.* has been raised. Mr. Dowson, county architect, is to furnish the design.

Burghead.—The first stone of a spire for the United Presbyterian Church here has been laid. It is to be erected by Mr. J. Anderson Hopeman, who executed the mason-work of the church. Mr. J. Petrie, carpenter, Burghead, is the contractor for the scaffolding. The spire is to be octagonal in form, the total height from the base of the tower to the ball crowning the top being 72 feet; and is to be built to accommodate a clock with four dial-plates.

Tynemouth.—The chief stones of three new churches are about to be laid at Percy Main, Whitley, and North Shields, respectively. Mr. Salvin is the architect, and Mr. Smith the contractor.

Dublin.—St. Andrews's Church, situate in the heart of Dublin, between Trinity College and the Castle, was burned down two years ago. The parishioners have resolved upon a building which will cost 12,735*l.* It is to be in the style of the early period of Decorated Gothic architecture, after plans by Messrs. Lanyon & Lynn; and will accommodate 1,000 persons. The portions of the

edifice necessary for divine worship will be completed first, at a cost of 7,000*l.* The tower and the ornamentation will be postponed.

Miscellaneous.—The Rev. W. M. Punshon, the Wesleyan preacher, has obtained permission of the Wesleyan Conference to devote himself to an effort towards raising 10,000*l.* for the erection of chapels in the watering-places of England.

PROVINCIAL NEWS.

Littlehampton (*Sussex*).—The following tenders have been sent in for Littlehampton, Arundel, and Houghton stations:—Williams, 15,462*l.*; Aviss & Sons, 13,893*l.*; Simms, 11,980*l.*; Perry, jun. (Arundel only), 4,239*l.*; Westley, 11,642*l.*; Bushby, 11,172*l.*; Reynolds, 10,669*l.*; Bull, 9,648*l.* The last tender has been accepted. The new quay at Littlehampton will be provided with a line of rails along its entire length.

Rochester and Chatham.—It is intended to open the new County Court, in Eastgate, in October next. The contractor is Mr. K. Spicer. The exterior of the building is completed. The large hall in which the court will be held extends the whole length of the building, and will accommodate some 300 persons. The remainder of the rooms upstairs consist of the judges' private rooms, and also the attorneys' room. The rooms on the ground-floor consist of offices for the registrar, high-bailiff, and other officials; in addition to which there is a small court for the examination of bankrupts by the registrar. There are also retiring-rooms for both men and women, and an abundant supply of water throughout the whole of the building. The entire cost of the new courts is defrayed out of the consolidated fund.

Abingdon.—The erection of a Corn Exchange in this town will be one of the first projects which will occupy the attention of the council in the new state of things which the enfranchisement of the corporation property will bring about.

Witney.—Mr. Bartlett, the contractor for the new Corn Exchange, has commenced pulling down the old Corn Returns Office, upon the site whereof the new exchange is to be erected.

Plymouth.—The contract for building the new tower and clock at Plymouth has been taken by Messrs. Call & Pethick, who will at once commence the erection of the structure. The work is to be completed by the 18th of October next.

Nottingham. — The new county court, which has been some time delayed, is to be commenced immediately. The contract has been given to Mr. James Hall, builder. The clerk of the works sent down by the Government is already in the town. —— The disparity in the contracts tendered for the construction of the Wilford Bridge has, it is said, been unusual. "The figure," says the local *Guardian*, "at which one contractor was willing to do the work was fully 8,000*l.* above that at which another eminent contractor has expressed his readiness to undertake it. Sir Robert Clifton is desirous to expedite the work; and the worthy baronet is at present in treaty with one of the most eminent engineering firms respecting the erection of the bridge."

Liverpool.—At the Town Council meeting of last week the elevation of the new Public Offices was considered. The amended plan, along with the first plan, was on the table for the inspection of the Council. The adoption of the improved elevation was moved and seconded. It was moved as an amendment that the plans be referred back for re-consideration; and after a protracted discussion it was put, and negatived by 24 to 23. The Deputy-Mayor said the plan should receive every consideration; and if any alteration could be made it should be brought before the Council at the next meeting.

Wigan. — The surveyor for the borough of Wigan has notified to the mayor and corporation, and to the occupants of the shops underneath the Wigan Town-hall, that the building is in an unsafe state, and ought not to be made use of unless secured. It has long been in a most dilapidated condition; and it is doubtful whether it can be made safe unless it is rebuilt.

Scarborough.—Sir Joseph Paxton has completed plans for the construction of an ornamental park, with about forty villas, on the Scarborough Corporation's Weaponness estate; and the town council will now take steps for the disposal of the various plots of ground marked out on the plan. The houses will stand near the base of Oliver's Mount, skirting it on the east, north, and west; on one side overlooking the bay; on another, facing the town and vicinity; and on the third, embracing the valley of the Mere.

South Shields.—The brethren of St. Hilda's Lodge of Freemasons having decided upon building a new hall for masonic purposes, operations have been commenced by the contractors for the work. The site is in Fowler-street. The building will comprise a lodge-room, with rooms attached, on the upper story; and below, two shops. The contractors for the work are Messrs. Scott & Suddard, of South Shields, builders; and the plans are from designs by Mr. R. S. Forster, under whose superintendence the works will be completed.

Dumfries.—The main sewer from the foot of Friars Vennel to the Dockhead of Dumfries, and which intercepts the whole sewage of the town, has been finished, according to the local *Courier*. The effect upon the purity of the river betwixt the caul and the Dockhead is said to be already decided and agreeable. The next step must be taken by the Maxwelltown authorities, who ought, without delay, to follow the example set on the Dumfries side of the river, and construct their main sewer, instead of, as at present, discharging the filth of Maxwelltown into the stagnant water at the head of the caul.

Kilsyth.—The foundation-stones of a gaol and court-house, and assembly-rooms, have been laid at Kilsyth with masonic ceremonial.

Portobello (*near Edinburgh*).—The chief stone of the town-hall for Portobello has been laid with masonic ceremonial. Mr. Bryce is the architect.

LIMOGES PAINTED ENAMELS.

THE "Catalogue of the Loan Exhibition at South Kensington," edited by Mr. Robinson, promises to form, when completed, a valuable handbook of Mediæval and Renaissance art-works. Part II. is now nearly ready, and will comprise Bernard Palissy ware, Sèvres porcelain, Limoges painted enamels, portrait miniatures; ecclesiastical vestments, tissues, and embroideries; and decorative plate belonging to the Universities of Oxford and Cambridge.

To verify the dates of the portrait miniatures, ably catalogued by the Rev. James Beck, M.A., a remarkable collection, some thousands of references have been made.

We bring together from the account of the Limoges enamels some information contributed by Mr. Augustus Franks, M.A.:—

The older mode of enamelling by the encrusted or *champlevé* process, which had been so extensively practised at Limoges in the twelfth and thirteenth centuries, seems to have died out in the fourteenth century; and it was not till the latter part of the fifteenth century that a new school of enamellers arose, destined to throw still greater lustre on the city of Limoges. These artists, though still working on copper, employed a different mode of applying the enamel, to which they may have been led by the recent extension of enamel painting on glass; at any rate, some of the earliest of the enamellers were themselves glass-painters, or related to glass-painters.

The painted enamels of Limoges may be conveniently divided into four classes: 1. The early or Gothic style from about 1475 to 1530. 2. The fine style, from 1530 to 1580. 3. The minute style, to about 1630. 4. The decadence, to the termination of the manufacture in the eighteenth century.

1. *The Early or Gothic Style.*—The enamels of this period were generally executed on stout plates of copper, nearly flat; the back was coated with a thick and opaque layer of enamel to prevent the metal from warping in passing through the furnace. The front or surface to be painted was covered with brown enamel, and the details of all kinds painted on in opaque white. Such portions as were to appear coloured were then glazed over with transparent enamels, and the lights and details were picked out with gold. To increase the rich effect of the painting, small raised discs of foil, called *paillettes*, were attached to the enamel and covered with colour so as to have the appearance of gems. The tints in these early enamels were very varied and exceedingly vivid, so as to produce the effect of illuminations. The faces are generally, however, too lilac in tone, and the white enamel is so thickly laid on as sometimes to assume the appearance of a bas-relief. The frames are generally of gilt metal, with simple mouldings, ornamented at intervals with pairs of leaves united by twisted stalks. The principal enamellers of this period were Nardon or Leonard Penicaud and Jean Penicaud. One of the most important specimens which has been preserved to us is the triptych of Louis XII. and Anne of Brittany (No. 1654), exhibited by Mr. Danby Seymour.

The name of Nardon or Leonard Penicaud has been preserved to us by an enamel bequeathed in 1853 to the Hôtel de Cluny, and which is signed, "*Nardon Penicaud de Limoges hoc fecit prima die Aprilis anno millessimo v^c^ tertio.*" [1503]. The researches of M. Ardant render it probable that he was born not later than 1474, and that he was living in 1539.* He seems to have been a man of some importance, from his having painted the triptych of Louis XII. and Anne of Brittany (No. 1654), and in 1513 he was elected Consul of Limoges. His enamels may be distinguished by the peculiarly lilac or violet tone of the flesh tints. Jean Penicaud, probably a relation of Leonard, has signed several enamels, and to him Count de Laborde attributes the Resurrection of Lazarus (No. 1656). On the enamels of this period may be frequently noticed imperfect inscriptions forming borders or decorations of the dresses; a style of ornament which occurs on other works of art of the fifteenth century, and was derived, probably, from the Oriental stuffs of an earlier time, striped with bands of Arabic inscriptions. They are worthy, however, of notice, as serving, by the language in which they are written, to prove the French origin of these enamels, and may be useful in classing the works of the various enamellers. They are not, however, likely to contain the artists' names, as was supposed by some of the earlier writers on these subjects, who discovered in them the imaginary artist Monvearni and others.

2. *The Fine Style.*—Owing to the great influence of the Italian artists, who formed the school of Fontainebleau, a great and rapid change took place in French art in the early part of the sixteenth century. The enamel painters were not behind the others, and they sought to improve their designs, and adopted a more sober and harmonious system of colouring. Many of the most successful enamels are merely painted in chiaroscuro, with light flesh tints, and occasionally a cool tone on the foreground. The use of *paillettes* was abandoned, the plates were made thinner and consequently more convex, and the enamel at the back nearly transparent. Great use was made of the designs of Raffaelle, which were rendered available by the engravings of Marc Antonio and his followers. The family of Penicaud still continued their labours, and some of their finest works form part of this Exhibition. The greatest, however, of the artists of this, the finest period, was unquestionably Leonard Limousin, whether we look to the variety or the artistic merit of his works; some of the most remarkable of them are to be found in this collection. Pierre Reymond commenced enamelling nearly as early as Leonard Limousin; two of his earliest and finest works are the triptychs (Nos. 1750 and 1751), painted in 1538. Then we find Jean Court dit Vigier and three members of the Courtois family shining chiefly in the production of enamelled services for the table. Their works, however, are somewhat florid in style and colour, though very perfect in mechanical execution. There is ample opportunity in the present collection of studying the merits of Pierre, Jean, and Martial Courtois.

Leonard Limousin, son of François Limousin, of Limoges, was born about 1505, and was probably a pupil of Leonard Penicaud. His works are dated from 1533 to 1573. He appears to have died between January 1575 and February 1577. He was in the service of the king, and in his enamels he occasionally styles himself "*Esmailleur et peinctre ordinayre de la chambre du roy.*" The collection exhibited on this occasion is very rich in this great enameller's works. One of the earliest and most important of them is the horn, painted in 1538, which is exhibited by Mr. Magniac. His portraits are among the most remarkable productions of his skill, and are here represented by no less than twenty-three specimens. Leonard Limousin varied frequently his style of painting, and adopted several different modes of applying his colours. Some of his later enamels are painted on a white ground, in employing which he anticipated Toutin, who is usually considered to have invented that mode of enamelling.

The family of Courteys or Courtois had long been settled at Limoges; in the fifteenth century, one of its members, Robert Courtois, was of note as a glass painter; Pierre Courtois may have been his son or his grandson. If we are right in considering the enamelled portrait by Pierre Courtois, exhibited by the Duke of Hamilton, as a portrait of himself, it will appear that he was born about 1532. This agrees with the dates on his enamels, which rarely occur, but range from 1550 to 1568. The most remarkable examples of his skill are nine large medallions, representing Virtues and heathen deities, preserved in the Hôtel de Cluny. They were made for the royal

* Les Penicaud, par M. Maurice Ardant, Limoges, 1858.

palace, Le Château de Madrid, and are medallions about 3 feet high, each of them composed of four plates of enamelled copper, beat up in relief. The works of Pierre Courtois deserve to rank high among the enamels of Limoges; his drawing is fine and good, and, though he made use of foil in considerable quantities, he avoided any great excess. The tone of his flesh colours is pale and subdued, not hot and fiery, as in some of the later enamels of Pierre Reymond and in those of Jean Courotois.

3. *The Minute Style.*—Jean Courtois, by the profuse use of foil and the over-richness of his colouring, prepared the way for several enamellers, possibly his pupils, who appeared towards the close of the sixteenth century, and are all distinguished by a very finical execution. The principal of these is Susanne Court, who made several fine ewers and dishes. There were also four members of the Limousin family, viz., Jean, Joseph, François, and Leonard. Their works are usually small, and their designs are frequently borrowed from the engravings of Etienne de Laulne.

4. *The Decadence.*—After 1620 the fashion for Limoges enamels seems to have gone by. We rarely find on the works of that period the devices of royal or noble personages, and seldom any specimens of such a size or workmanship as likely to have been made for people of importance. This was partly no doubt owing to change of fashion; but also in some measure to the importation of Oriental porcelain, and the introduction of the art of enamelling on gold as practised by Toutin. The enamellers of this later period are numerous, but chiefly of the families of Laudin and Nouailher. Of these, Jacques Laudin produced some grisaille paintings of merit, rendered attractive by the fine glossy black ground which he employed. The later productions, especially those of the Nouailher family, are more like paintings on earthenware than enamels.

The family of Laudin supplied the school of Limoges with the best of its later enamellers, and some of their works have a certain degree of merit, especially those painted in grisaille, which are rendered attractive by a very fine black enamelled ground. The enamellers of this family were three Noel Laudins, Nicholas Laudin, two Jacques Laudins, and Valerie Laudin.

The best work on the subject of Limoges painted enamels is the "Notice des Emaux du Louvre," by Count de Laborde. It is a catalogue of the enamels in that Museum, through which is interspersed a running comment, giving a complete history of the art, while the notes contain notices of examples in other collections. This work is remarkable for the clearness of its style, the soundness of its criticism, and the minuteness of its details, and is in truth a model catalogue. An earlier and very good treatise on the subject is in the introduction to the catalogue of the Debruge-Dumenil collection, written by M. Jules Labarte (Paris, 1847). A translation of this work by MRS. Palliser has appeared in English, under the title of "Handbook of the Arts of the Middle Ages (London, 1855)." A brief sketch of the subject is given in the "Art Treasures at Manchester": Vitreous Art. Some very useful details, especially of a documentary character, are to be found in the notices, printed from time to time by Mr. Maurice Ardant, of Limoges, which have to a certain extent superseded his treatise "Les Emailleurs de Limoges," published in 1855.

CIRENCESTER CHURCH.

THE inhabitants of Cirencester held a public meeting on the 15th ult., at which Earl Bathurst presided, to resolve on restoring their magnificent parish church. It is a vast fabric of the fifteenth and earlier centuries, and of that ornate character and extensive construction which place it beyond the means of local resources to do what is required, after the lapse of years and the many odd things which have been done at various times to spoil the architecture and ecclesiastical arrangements of this class of edifices. Cirencester was one of the mitred abbeys, and the church was gorgeous. There are remnants of glass indicative of the blaze of colour that distinguished its numerous and large windows. But these cannot be included in what the parishioners restore, as 4,000*l.* would not suffice for that item. The pews are to be replaced by oak seats, open; and the dilapidated portions requiring to be rebuilt will involve a considerable outlay.

Cirencester is a known place, rich in Roman antiquities and other attractions; and we doubt not that the parish will obtain assistance from archæologists, ecclesiologists, and agriculturists, who have admired its museum, its church, and its college. They require 12,000*l.*; and their donation list, still in progress, amounts to upwards of 5,000*l.*, collected at home, preparatory to a public appeal to the county of Gloucester and the kingdom, interested in preserving such a noble structure. The inhabitants are still at work with their own donation list, to which their chiefs have contributed most liberally. Mr. G. G. Scott is their architect, who has within the last twelve years built them a church that cost a large sum; and this gives them a claim for foreign help in restoring their costly parish church. We hope that the exquisite open battlement work and pinnacles that crown the exterior of the nave and aisles, and are too decayed to stand, will be within the means of the restorers. This work must cost much, but no restoration can be complete without it.

BRANDESTON, SUFFOLK.

THE parish church of All Saints, Brandeston, is undergoing restoration, under the superintendence of Mr. R. M. Phipson, architect, at the sole expense of Mr. Charles Austin, Q.C., of Brandeston Hall. The edifice, which is not large, consists of a chancel, nave, and west tower. The two latter are of the Perpendicular period, but the chancel shows evidence of earlier work.

Both the nave and chancel are being re-roofed, with open hammer-beam and collar-braced roofs, covered with old plain tiles. The old roofs possessed no features of interest, having been put up in 1768, in the then approved churchwardens' style. A new vestry and north porch are being built, and the stonework throughout generally restored. The benching will be open, with poppy-head ends, and will be similar to the old, several remnants of which still existed, cased behind the high pews. The heating will be by hot-water pipes, laid below the surface of the passages.

The west tower is a very good specimen of hammered flint work; and there is a very perfect west door, an accurate engraving of which will be found in p. 415 of the *Builder* for 1848. This will be left untouched.

In the churchyard lies buried Revett, the joint author, with Stuart, of the "Antiquities of Athens." An ancestor of Revett's built, in E izabeth's reign, the old Hall, which was almost entirely burnt down about fifteen years ago, and has since been rebuilt and restored under Mr. Phipson's superintendence. In the new Hall are elaborate wood panelled ceilings; the dining-room, library, and hall, being highly illuminated in colour.

The Revett family held the estate until a recent period.

A cemetery-chapel is about to be erected in the village, for which the last-named architect is preparing designs.

CONDITION OF THE TREES IN KENSINGTON GARDENS.

THE writer of the article in the *Builder* of last week agrees with me that drainage would be an improvement to the gardens;—that it was a tunnel, and not a drain, that killed the trees referred to by Mr. Cowper (*vide Builder*, August 2nd); but he does not appear to think it of so much importance as I believe it to be. If it were only for the comfort of persons visiting the gardens, the land ought to be drained; for it is a mistake to suppose that such persons will confine themselves to the walks. If they visit the gardens for exercise or relaxation, their walks, to be healthful or pleasant, must be without trammel or impediment of any kind.

The trees have no doubt escaped with little thinning; and some of the tall, slender, and thickly-planted do battle with their tops, to the mutual injury of all engaged in the contest. But I must affirm that water standing under and about trees, of almost any kind, does incalculable mischief. In my practice I have met with many cases where timely-adopted drainage has resuscitated the trees beginning to decay at the top. The sap is impoverished by standing water: the air is excluded from the roots, which are rendered cold, in place of being dry and warm.

It would be a *great mistake* to assert that "on a table of inclined land, drainage, or the neglect of it under the thick shade of groves, could occasion decay," well knowing that water cannot stand in pools on an inclined surface; but a considerable portion of the table-land in Kensington Gardens is not only flat, but hollow, where the water stagnates, and where it is the principal cause of that decay in the top branches of many of the trees, particularly the limes, that I spoke of.

On an estate belonging to the Savill family, there is a wood of some 300 acres, called Wellow Park, that has been noted for years for the excellent quality of its oak and ash. On a large portion of the wood, the fine oaks not arrived at maturity began to decay at the top: a system of open drains was adopted to draw off the stagnant water from the surface, and the trees began to recover immediately. I might adduce many similar cases; and may remark that open drains are far more beneficial than covered ones in woods, for this reason,—the sides of the ditches keep the soil dry for some depth below the surface, and admit of a free circulation of the air, which is so grateful to the young roots; while at the bottoms of such drains there will always be a little moisture in the driest season.

The super-stratum of Kensington-gardens being gravel does not alter the fact of the water standing on the surface; for in some parts—and it must have been noticed by thousands—the water does stand on the surface for two or three days after much rain; and there is a kind of gravel as non-absorbent as clay itself. I allude to flint gravel mixed with clay, a common superficial deposit found in chalk districts, and of which kind I opine the super-stratum of Kensington-gardens consists.

As to the *taste* and *skill* evinced by the designers and planters of these grounds, I will quote the words of Mr. Repton. He says, "If it were possible to exclude from Hyde-park or Kensington-gardens the gay assemblage of company which enlivens the scene, we should only produce one dull, cheerless solitude, without a single feature to constitute natural landscape, or to reconcile the mind to artificial rows of trees, with their symmetrical formality." Admitting, however, that the crowded condition of many of the trees is not a fault of theirs—that the object of grove-planting is to lengthen the stems by close planting in the first instance, and gradually to thin the trees as they increase in size;—still that only proves that the control of these gardens has been left in improper hands. Nor does their condition at this time reflect much credit on their present management.

Admitting all this, I for one should be sorry to see the wholesale destruction of *one-fourth* of the trees now standing, so strongly recommended in your pages. As judicious thinning was neglected at a former period, it is too late now to remedy the evil; for years must elapse before the mischief that would be done could be repaired. J. B.

TREATMENT OF WORKS OF ART.

I AM surprised to see in the *Times* of last week an account of a triptych, found during the restoration of Hexham Church, being claimed by the builder under his contract, as "old materials," and purchased by an architect. Surely such a work of art—and, from the description, one of great interest—cannot be made over as rubbish, but must still remain the property of the parish; and if so, has no right to be removed from the church. Instant restitution should be made. It is thus that our ecclesiastical restorations are now indeed becoming acts of Vandalism; and this is a case calling for the very strongest condemnation of the committee appointed by the Institute in June last; or, ere long, every vestige of our ancient art will be lost in modern spoliation. The past fate of Hexham Church ought, at least, to have preserved this interesting discovery, and I trust proper restitution may be made, and this triptych restored to its proper place without delay. JOSEPH CLARKE.

THE FIRE AT NEW CROSS.

SIR,—Many of your readers will, I have no doubt, sympathize with the workmen who are sufferers by this extensive fire. Sixty men are thrown out of work by this calamity, and their tools, to the value of about 400*l.*, have been entirely destroyed. We are endeavouring to get a fund together for their assistance; and I believe, if you will do me the favour to insert this letter in your next, you will help this very distressing case. Mr. Tate, of 5, Warnford-court, E.C., one of my churchwardens, will be glad to receive contributions, as well as myself. We are urgent to obtain aid for the sufferers, who, unless assisted to obtain tools, must remain out of work for an indefinite period.

AUGUSTUS K. B. GRANVILLE.
Hatcham Parsonage.

WORKMEN AND CHURCH.

SIR,—Having noticed in your Journal for some weeks past the correspondence headed "Workmen and Churches," and also the various opinions of your correspondents as to the causes which tend to keep workmen from attending church, none of whom (as far, at least, as my experience and observation go) have hit upon the real causes, why workmen in general, and builders' workmen in particular, do not attend church;—

You, therefore, I trust, will permit me in a few lines to give your correspondents a little information on the subject. It is not in the want of church accommodation, or that workmen object to sit in seats labelled free; but that workmen generally object to the service, and to the manner in which it is conducted: they do not like attending any place of worship where, Sunday after Sunday, the same forms of prayer are drawled out with the most unvarying monotony, and where the sermon is read off in the most formal and passionless manner. Workmen, after six days' toil, want something more exciting, even in a church.

If your correspondents wish to see places of worship where working men do attend, let them, for once in a way, step (on any Sunday) into the Metropolitan Tabernacle or into the Surrey Chapel. They will there find plenty of working men. Yes! and not asleep; but with their eyes and ears open, and their attention riveted by the observations of the preachers.

There is another powerful reason why workmen generally do not attend church on a Sunday; and that is this:—That, after spending six days of hard labour in the workshops (which in London are not the most healthily situate), the tired workman, thanks to Sunday trains and cheap fares, avails himself of a trip into the country, where he can refresh himself with pure air, and enjoy the delightful scenery which the country can alone present; returning home bodily and mentally improved.

I can assure your correspondent, who suggests that large builders should lend their workshops for preaching, that his suggestion is a perfectly useless one, no matter how well intentioned it may have been. Builders' workmen will never attend if left to themselves; but if, as your correspondent suggests, the master builders use their *influence*, it might be different.

Left to themselves, they will look upon the suggestion as being simply ridiculous; knowing that they have quite enough of the shops during the six days, without attending on the seventh.

Working men require something more than toil and prayers. Such is my opinion, after about twenty years' experience among building workmen and in builders' shops of London. R. W.

PIGS AND A BOARD OF HEALTH.

SIR,—Would you kindly inform me what I am to do in the following case?

I had occasion, some three months ago, to remove to a cottage in Leckhampton. Since that time my neighbour has got a pig, with sticking wash, &c., within 10 or 15 feet of my children's playground. I have read the 58th and 59th section of the Public Health Act, and called the attention of the inspector of nuisances to the case. He called upon them, and spoke about it, and afterwards sent them a notice. The nuisance is still the same,—so much so, that we are compelled to keep the house shut up, in the evening particularly, to make it habitable; but I cannot get him to proceed further in the matter. The magistrates of the adjoining parish of Cheltenham have decided time after time that pigs are a nuisance, and only recently made an order for removal of a piggery which cost 300*l.* in the construction. The same magistrates would have to decide in this case. I have no chance of getting any of the neighbours to join me, as they are all guilty of the same, or indifferent; but, having read your papers on the subject, I am determined to carry it out, if I can.

Since I have been here, one woman has died of some fever, and another has been attacked with bilious fever: so a lady who visits the neighbourhood told me. She also said that two families who have the pigs, &c., want more hospital tickets than any she visits, only she does not want her name mentioned. G. S. X.

*** Apply formally to the Local Board of Health. If this fail, write to the Health Department of the Privy Council, Whitehall, for advice.

MEDHURST'S TROPICAL FELT HELMET.

IT is not an easy thing, it seems, to "cap" our army; and, in one sense of the word, we may be proud of the fact. In another, however, it should lead to a fair trial of all proposed improvements; so that our brave soldiers may neither be stifled, weighed down, nor left unprotected. The helmet now before us, which leads to this remark, is one invented by Lieutenant Medhurst, of the 43rd Light Infantry. It is of felted wool, light and durable, and is intended for India. According to the inventor and patentee, it is impervious to heat and rain. The top of the helmet resembles the hunting-cap; but over it is a small cone perforated by two holes at the sides to admit sufficient air for circulation. Round the head there is a strap ¾ an inch wide, with a buckle fastening behind, which can be tightened or loosened at discretion; thus avoiding the risk of the helmet being blown off or lost in active service or action. The front and hinder peaks are connected by sloping sides of a suitable size for affording protection to the temples, without an impediment to either firelock or sword. It has been tried for some time, with the concurrence of the Commander-in-Chief; and will, we hope, be found to supply a want long felt.

RECENT PATENTS CONNECTED WITH BUILDING.*

IMPROVEMENTS IN THE MANUFACTURE OF GLUE OR SIZE.—*J. Dale.* Dated Dec. 17, 1861. Here the patentee takes tanners' refuse called "flushings," and adds thereto muriatic acid: he then washes them; afterwards neutralizes any remaining acid; boils to separate the fatty matters, and obtains glue or size in the ordinary way.

IMPROVED HOISTING APPARATUS. — *A. V. Newton.* (A communication.) Dated Dec. 17, 1861. This consists in the use of two pulleys of different diameters, and an endless chain, band, or rope, applied to the pulleys, and arranged substantially as described, whereby the desired end is attained. The invention is not described apart from the drawings.

IMPROVEMENTS IN THE PROCESS OF MANUFACTURING ARTIFICIAL STONES, PARTS OF WHICH ARE ALSO APPLICABLE TO THE MANUFACTURE OF ARTIFICIAL FUEL.—*R. Bodmer & W. Wilson*, Newport, Monmouthshire. Dated 28th January, 1862. The patentees claim—First, the application and use of sal ammoniac, or other salts of ammonia, in the manufacture of artificial stone or bricks made according to the process described in the specification of L. D. Owen's patent, No. 1270, dated 28th May, 1856. Secondly, the manufacture and use of artificial stones or bricks entirely of hydraulic or other limes, or of a combination of different varieties of lime, for the purposes described. Thirdly, the manufacture and use of artificial stones or bricks of a black or dark colour, either for building purposes or for fuel, as described. Fourthly, the application and use of sal ammoniac, or other salts of ammonia, in the manufacture of artificial stones or bricks made entirely of hydraulic or other limes, or of a combination of different varieties of lime, or in the composition of which natural or artificial calcareous cements are employed.

MANUFACTURE OF BRICKS, TILES, &c.—*W. Smith*, Bury. Dated 1st February, 1862. The patentee claims—First, the revolving cylinder and combination of parts for pressing the clay or other plastic material into the moulds, as described. Secondly, the ram and spring and combination of parts for resisting the action of the clay or other plastic material whilst the mould is being filled, as described. Thirdly, the block or blocks for pressing the clay into the moulds, as described. Fourthly, the steam cylinders and combination of parts for pressing the clay or other plastic material, in the manner described. Fifthly, the apparatus and combination of parts for receiving and removing the bricks after leaving the mould, as described.

IMPROVEMENTS IN LATHS FOR VENETIAN BLINDS, IN PAINTING SUCH LATHS, AND IN RAISING AND LOWERING VENETIAN BLINDS.—*E. Pace.* Dated January 22, 1862. The patentee claims:—1. The manufacture of laths for Venetian blinds by a slicing knife as described. 2. The construction of laths for Venetian blinds by gluing or cementing together two or more leaves or thicknesses of wood sliced or cut out of the plank as described. 3. Painting the laths by a roller or rollers in manner described. 4. Raising and lowering blinds by a roller fitted with a ferrule, in which is inserted a divided spring plug, substantially as described.

IMPROVEMENTS IN MACHINERY FOR MAKING NAILS AND SPIKES.—*C. T. Bousfield.* (A communication.) Dated January 21, 1862. This relates to a novel arrangement of parts, constituting an improved nail-making machine, in which two pairs of compressing rollers are used for tapering the ends of the metal rods fed into the machine to a suitable shape for forming nails or spikes, in combination with a cutter for severing such tapered ends from the rods, and a heading die for striking up the heads of the nails or spikes while the same are held firmly between nipping dies; the object being to effect in a rapid and economical manner the conversion of rods or bars of iron or other suitable material into nails or spikes.

MALLEABLE CYLINDERS USED IN ENGINEERING AND ARCHITECTURAL STRUCTURES. — *E. W. Hughes*, Parliament-street, Westminster. Dated January 14, 1862. This invention consists in constructing cylinders or tubes, suitable for columns or supports used in engineering and architectural structures, by forming and combining plates of wrought or malleable iron, each of which is rolled with two outer projecting flanges, which are produced at angles greater than a right angle to the plane or outer surface of the plate.

IMPROVEMENTS IN THE MEANS OF PRESERVING STONE, BRICK, SLATE, WOOD, CEMENT, &c., FROM THE INJURIOUS ACTION OF ATMOSPHERIC AND OTHER INFLUENCES, ALSO IN THE APPLICATION OF COLOURS TO THE SURFACES OF STONE, BRICK, WOOD, SLATE, &c.—*A. H. Church.* Dated 28th Jan., 1862. The patentee claims—First, the exclusive use of a solution of silica in water, when preceded or followed by a solution of baryta or strontia in water, that is to say, the successive or consecutive employment of such solutions as applied to any of the recited purposes of the said invention, according to the processes and after the manner described. Secondly, the exclusive use of the mixture of a solution of silicate of potash or soda with sulphuric, hydrochloric, or other common and suitable acid (and which mixture may be regarded as an impure solution of silica), preceded or followed by a solution of baryta or strontia, as applied to any of the purposes of the said invention.

IMPROVEMENTS IN THE CONSTRUCTION OF STOVES OR FIRE-PLACES.—*J. Tow.* Dated Jan. 18, 1862. The object here is the construction of stoves or fireplaces for heating apartments or buildings, whereby the draught can be easily regulated and the escape of smoke into the room or apartment prevented. There is also an arrangement by which hot air may be conducted from such stoves to any part of a building. Stoves or fireplaces constructed according to this invention are formed in several parts, so that they may be readily taken to pieces for examination or repair, and for facility in fixing.

* Selected from the lists published in the *Mechanics' Magazine*, and the *Engineer* Journal.

Books Received.

The Annual Retrospect of Engineering and Architecture: a Record of Progress in the Sciences of Civil, Military, and Naval Construction. Vol. I. January to December, 1861. Edited by GEORGE R. BURNELL, C.E. London: Lockwood & Co. 1862.

THE editor or author of this able review of engineering progress apologizes for delay in its publication; and yet, although he is no doubt correct, in the main, in thinking that an earlier issue would be desirable; still, in some instances, he is rather premature in his announcements; as where he takes it for granted that Mr. Page's design for Blackfriars new Bridge is the one that will be carried out. For the future, however, he proposes to avoid delaying the publication of his serial till it be "out of season."

Much of the matter of the volume is new, in form at least, although the editor has extracted from the contemporary press a good deal of what appeared to be of sufficient interest for his pages. This is indicated here and there by the use of a different type: it is not pretended that all the valuable or even the best articles contained in the technical journals, or in the proceedings of the scientific societies, have been inserted; and too many of them indeed have not even been noticed; but the limits of the volume are restricted; and all that could be expected in such a case was a judicious selection.

The subject-matter is arranged in five divisions: 1, Civil Engineering; 2, Architecture; 3, Military Engineering; 4, Naval Engineering; and, 5, Miscellaneous Matter. Among the sub-divisions or sections of the first division are articles on metropolitan railways and streets, street tramways, Thames embankment, Blackfriars Bridge competition, creosote *versus* boring-worm, oil-wells of America, leakage of gas from street mains, charcoal in sewer ventilation, steam and sewage in agriculture, Mont Cenis Tunnel, gas-power engines, cementation of steel, and telegraphic progress, besides a variety of other articles. Amongst the sections of the second division are articles on the New Foreign Office, street architecture of London and Paris, artisans' dwellings, London and Paris hospitals, new materials and processes, preservation of stone, &c. The other divisions

include, among others, articles on coast defences, cupola ships, strength of iron ships, &c.

The extension of metropolitan railways, Mr. Burnell, somewhat paradoxically, imagines will only still farther obstruct the street traffic. As to the leakage of gas from the London street mains, and on other subjects, he equally aims at a little speciality or distinguishing singularity of opinion. The fact that the metropolitan gas mains do extensively leak, and at the joints too, as well as through the porosity of the iron, is one now well enough established; and it is to be regretted that an engineer such as Mr. Burnell thus sets himself against the endeavours of late being made to amend this both economic and sanitary evil. As to the extent of the injury done to water mains by gas leakage, on which Mr. Burnell also casts a doubt, the water companies at least, and those whom they have employed specially to investigate the subject, have a very different opinion from that entertained by him. Moreover, it is a well-known fact, which he by no means admits, that a better mode of jointing the gas mains has been adopted in some provincial towns, with a notable diminution of leakage as the ascertained result. As to other sources of loss of gas, Mr. Burnell may be quite right, in some respects; as from its own condensation, for example; and from the tampering with consumers' meters; and, he might have added, with service-pipes; but as to the inaccuracies in meters increasing the loss of the companies, as he erroneously imagines; it is a well-known fact that in general the result is precisely the contrary, or a decided gain to the companies, and not a loss, as he supposes; meters usually measuring far ahead of the actual quantity consumed. What effect in modifying this result the testing of meters may have, remains to be seen when the new law has been a little longer in operation. There is one circumstance, too, in reference to the leakage of gas from street mains and injury to water-pipes, of which Mr. Burnell does not seem to be aware; namely, that there is a peculiarity in the soil of the metropolitan streets which tends, in connexion with the gas leakage, to promote the injury in question. He is quite awake, however, to the existence of similar or analogous circumstances as regards waste of iron pipes in other towns: thus, he says,—

"There are some rather curious phenomena connected with the durability of gas-pipes in the ground, and sometimes of service-pipes in houses, to which attention may well be called, in the hopes of eliciting some inquiries on the subject. The phenomena alluded to are as follows:—Cast-iron pipes imbedded in soils like those of Holland, or of our own Essex marshes, are rapidly affected by the chemical agents contained in those soils; and again, in the neighbourhood of Newcastle there are occasionally present in the ground sulphur compounds which act very injuriously on cast-iron. The wrought-iron service-pipes, under these circumstances, decay with much greater rapidity; and it is also to be observed that, when wrought-iron pipes are in immediate contact with Roman cement, they are acted upon more rapidly than when they are in contact with ordinary lime-mortar. In the neighbourhood of Newcastle, it seems that the danger to the cast-iron pipes is sufficiently great to induce a new gas company, established in that locality, to attempt to substitute glazed stoneware for cast-iron."

Of this attempt he says,—

"The practical difficulties in the way of so doing consist in the number and mode of making the joints; in securing the strength and impermeability of the pipes; and in providing for the insertion of service-pipes. All these are, however, susceptible of solution; and no doubt success will soon reward the exertions of the able and energetic men who are now engaged in the attempt to place within the resources of the gas-engineer pipes of a more indestructible nature than those now almost universally employed. Stoneware pipes, it may be added, would present another advantage in this respect, that they are good non-conductors of electricity; and if they were used, the class of accident reported to have occurred at Munich could not be repeated. Their brittleness is an objection to them; but by increasing the thickness, and by burying them deeper in the ground, it might be possible to avoid this cause of danger, and at the same time to render the loss by permeation almost imperceptible. From the few observations we have been able to make on the resistance of this class of materials, we are disposed to think that the stoneware pipes with the felspathic glaze are most likely to fulfil the desired object; but experiments on a large scale are required before any decided opinions can be formed on the subject."

In treating of the progress of street architecture in London and Paris, Mr. Burnell objects to give the palm to Paris. London, he thinks, contrasts favourably, on the whole, with the French capital. There is, perhaps, a want of unity of direction, he remarks, and of grandeur of conception, in the works of improvement lately executed in our own metropolis; but—

"A careful comparison of the buildings lately executed in London for domestic purposes with those erected in Paris, will prove that the rule of tempered liberty is far more favourable for art, than is the most perfect system of governmental organization. There is greater vigour, more thought, originality, and truth in the buildings lately erected in Cannon-street, Fenchurch-street, Cornhill, Leadenhall-street, Broad-street, Threadneedle-street, Mincing-lane, Tower-street, &c., than can be found in any new part of Paris; and even the builders' architecture of South Kensington and of Tyburnia, detestable though it be, is bolder, freer, and of a purer taste, than the meretricious architecture of the new Boulevards of Paris."

The houses in the new streets of the French metropolis, he observes, are drilled to the same degree of uniformity as a regiment of soldiers would be; whilst all originality, all the quaint picturesqueness of outline which was observable in old Paris, have disappeared under the influence of the modern notion of equality. The taste of the architectural details in the elevations, he thinks, is also as questionable as their general effect; for "the 'bed-post and valance' style of ornamentation; the unmeaning introduction of shallow panelling; and the ineffective profiling of the mouldings in accordance with the taste brought into vogue by Mr. Duban, of the École des Beaux Arts, have been exaggerated in the new streets."

On the whole, Mr. Burnell's volume forms an interesting retrospect and record of engineering progress, and it merits an extensive sale; but it may be a question whether there really be a public, beyond those who keep themselves *au courant* by means of our own and other journals, sufficiently interested in such a serial to enable it to pay. We sincerely hope there may, but we have doubts about it.

VARIORUM.

"Links in the Chain," by George Kearley, is one of Messrs. Hogg's useful series for young people, "Books with a meaning." It is well calculated, not merely to enlighten the reader, but to induce a love for the study of nature, which provides a perpetual pleasure for those who enter upon it. Of the "Aquarium and its Inmates,"—

"Pellucid pools, and rocks in miniature,
With their small fry of fishes, crusted shells,
Rich mosses, tree-like sea-weeds, sparkling pebbles,"—

a good account is given. It is a pleasure and a privilege to walk the country with one who knows its occupants and produce, even if he be not quite so learned in these matters as Thoreau, of whom a recent American writer says, speaking of an excursion with him on a particular day, that he looked for the menyanthes; detected it across the wide pool; and, on examination of the florets, decided that it had been in flower five days. He would read off at any time the names of all the plants that should bloom on the day, whereof he kept account, as a banker when his notes fall due. The cyprepedium not due till to-morrow. He thought that, if waked up from a trance, in the swamp, he could tell by the plants what time of the year it was, within two days.—— The new number of the "Art-Journal Catalogue of the International Exhibition" includes an engraving of part of the famous "Norwich Gates," manufactured by Messrs. Barnard, Bishop, & Barnard, from the designs of Mr. Thomas Jeckyll, of Furnival's Inn, by whom also the work was superintended.——"The Social Science Review," in its last number, arrives at the conclusion that the provision of dwellings for the working classes, by the extension of suburban residences in the form of streets, is a failure. The writer says,—

"In plain words, it has become obvious that to extend the population of a city by covering its ground with people, and increasing the acreage of its foundations, is but to perpetuate the evils of the city in the mass, and to separate, at the same time, the artisan population from its work by miles of brick and mortar."

——"Outlines of English History." By Henry Ince, M.A., and Jas. Gilbert. (Kent & Co.) The two hundred and first thousand of this book shows an enlargement in size over those editions which preceded. It gives much valuable information in a small compass.——"Essays and Tales." By William Dawbarn. (A. Hall, Virtue, & Co.) The fact that this little book is one result of the leisure hours of a timber and slate merchant gives it an extra claim to our attention. It does not, however, need this: it includes a number of sensible and amusing sketches, and may be read with advantage.

Miscellanea.

DUKES AND BISHOPS AS FIREMEN.—Dukes and bishops are not standing still in this era of movement. We lately alluded to the praiseworthy efforts of the Duke of Sutherland to improve our means of extinguishing fires. A bishop does not think it beneath his dignity to follow in a like useful course. At a fire which occurred last week, near Caldbeck, occupied by patent fire-light manufacturers, amongst those present was the Right Rev. the Lord Bishop of Carlisle, who kept the engines at work; formed distinct lines of men and women; and otherwise made himself of great service till the flames were quenched.

EXHIBITION OF BRIGHTON ART SOCIETY.—The annual exhibition of paintings by the Brighton Art Society is said to be quite equal, if not superior, to that of last year. The collection consists of above 400 pictures, including landscapes, sea-views, historical subjects, portraits, &c., both in oil and in water colours.

DRAINAGE OF LAKE FUCINO.—A letter from Rome states that, by the aid of Prince Torlonia, the ancient aqueduct of Claudius, which was intended to draw off the waters of the Lake Celano or Fucino, is re-established. Its overflowing frequently desolated the surrounding country; from which, when the water had retired, poisonous exhalations emanated. Time is still requisite to drain the Fucino entirely; but the progressive lowering of it will by degrees restore to cultivation a superficies of 35,000 acres. It is calculated that the sale of the land will quadruple the capital expended on the undertaking.

THE MIDDLE-LEVEL INUNDATIONS.—There is not more than a foot and a half of water on the land now, it is said, on any part: of course those parts where the water is off present rather a melancholy spectacle, but we believe that in such cases the land (like that of Egypt) is really improved by the inundation. Most of the houses, chapels, and other buildings that have been under water bear indication of the foundations being sapped. Nearly all will have to be rebuilt at a great expense. The line of railway between Lynn and Wisbeach, which has been submerged, is now dry, and a large number of workmen have been busily engaged in relaying the permanent ways. The damage done to the railway property is estimated at some 10,000*l*. The Marshland engine, which was rendered useless by being choked up with the water, is got to work again; and the fixing of the syphons over the coffer-dam is going on.

COMPENSATION CASE; PORTSMOUTH.—An important case has just been tried in the Sheriffs' Court of Hampshire, a special jury having been empanelled at Portsea for the purpose of assessing the compensation to be paid to Mr. Thos. Thistlethwayte; the Government having taken part of his estate, consisting of Portsdown-hill, which is four miles in length, and comprises 1,000 acres, for the purpose of constructing the fortifications for the defence of Portsmouth on the land side: they also require the clearance of 1,000 acres of the adjoining land from all hedges, ditches, trees, and other obstructions. According to the *Star*, the case commenced on Tuesday last; Mr. Lloyd and Mr. Johnson, Q.C., appearing for the claimant; Mr. Hawkins, Q.C., and Mr. Hannen, for the War Department. Eleven surveyors were examined in support of the claim; viz., Messrs. Pink & Garrett, of Fareham; Smith, of Portsea; Sturge, of Bristol; Huskinson, of Nottingham; Matthews, of Birmingham; Chinnock, Driver, & Fuller, of London; Squarey, of Salisbury; and Westbury, of Andover;—whose average valuations amounted to about 104,000*l*. The case was not concluded until Friday night, and resulted in a verdict for the claimant of 95,200*l*.

ARCHITECTURE IN THE PROVINCES.—Continuing the endeavours, to which we have already referred, the *Leeds Mercury* remarks, not without justice:—"A reform in the public taste cannot proceed from the architects. There are architects in most towns of Yorkshire able to produce good designs for private houses, if people want good designs. But, if people don't want good designs, we may feel sure that architects won't produce them. Architects are just like other men, and will do no more than is required of them. Why should they waste their time and rack their brains to form beautiful plans, when their beautiful plans will receive no adequate appreciation? Servants generally are just what their masters make them. If a master cares nothing about how his work is done,—if he is just as well content with work turned out in a slovenly manner as with work turned out in a neat manner,—we know that the work will be turned out in a slovenly manner. Architects are but the servants of the public. If the public is careless, the architects will be careless. If the public is exacting,—if it insists on good work, on economy, neatness, and elegance of design,—it will soon find these qualities attained pre-eminently by a few, and moderately by all. The example has only to be set, and it will soon be followed. So it was with warehouses. One single warehouse in Leeds, rising above its neighbours in architectural qualities, soon compelled others to adopt a similar style. A row sprang up. Rival rows are springing up, and the healthy competition bids fair to place the warehouse architecture of Leeds as high as the warehouse architecture of any other town in England."

LIGHTNING A GOOD SERVANT.—During a recent storm in Iron Mountain, America, the lightning struck a large ore bank in one of the furnace cuts, and dislodged and threw down from 2,000 to 2,500 tons of ore. To have dislodged the same by powder would have cost the company several hundred dollars.

THE COMBUSTIBILITY OF PETROLEUM.—In reference to some experiments on this subject at Liverpool, which Dr. Angus Smith, who has made many trials of the oils so called, thinks unsatisfactory, he says:—"The two great facts to be remembered respecting the volatile petroleum are, first, that the vapour rising at the ordinary temperatures ignites readily, and when mixed with air explodes. It mixes with air like gas, and in this lies its hidden danger: secondly, when water is thrown on the oil, the oil floats on the water and still burns; whereas spirits mixed with water become diluted, and cease to burn."

BELGIAN SCHOOL OF ART.—We have just heard of the death of Mr. Erin Corr, member of the Royal Academy of Belgium, director of the School of Engraving of the Academie Royales des Beaux Arts of Antwerp, and Knight of the Order of Leopold. Mr. Corr was the son of an expatriated Irishman, who, having become involved in the Rebellion of 1798, in conjunction with Lord Edward Fitzgerald, Emmett, and others, was compelled to fly from his native land, in order to avoid the dreadful penalties of high treason. Erin dedicated his life to a study of the fine arts, under eminent masters of the day; and, by the zeal and ability which he displayed in his profession, won a reputation.

GAS.—The Oxford Light and Coke Company have declared a dividend of 7½ per cent; and the Bury St. Edmund's Gas Company one of 10 per cent.——The Wick and Pulteney Gaslight Company have resolved to reduce the price of their gas from 12s. 6d. to 10s. per 1,000 cubic feet. Of course, with such prices, their dividends are not so high as in places where the charge made for gas is much lower: the company, however, have just declared a dividend of 5 per cent., which is more than they have hitherto deserved. ——The Wolverhampton Gas Company has declared a dividend for the last half-year at the rate of ten per cent. per annum, and placed a considerable balance to their reserve fund. In reference to a reduction in the price of gas, the Vice-Chairman said, at the half-yearly meeting, that, whenever the directors found themselves in a position to do so, the first and most gratifying thing to them would be to make a reduction in the price; for not only would this afford satisfaction to the present customers, but it would increase the consumption.——The South Shields Gas Company have declared a dividend at the rate of nine per cent. per annum for the last half-year.

MODEL DWELLINGS IN LEEDS.—The Leeds Model Cottage Building Committee have had completed a second block of model dwellings in that town. The houses have been erected on the estate recently opened out at Burley. The first block, erected at Beeston, was called "Victoria-terrace:" the second has been called "Albert-terrace." On both the committee invested 2,200*l.*, which has been repaid or secured; and, in a few years, the whole of the sixteen occupiers will be freeholders, and living on their own properties. The completion of these undertakings has established the fact, that good, neat, and well-arranged houses, well ventilated and well drained, with gardens and separate conveniences, can be built and placed in the hands of the occupiers for 150*l.* to 180*l.* The next step is to erect a lower class of houses; and it is proposed to organize a society for the erection of model cottages to cost not more than 105*l.* or 110*l.*; and to do this, not as a matter of philanthropy, but really as a business undertaking. The eight houses forming the block just completed have cost 1,330*l.*; the two end houses costing respectively 190*l.* and 180*l.*, and the remaining six 160*l.* each. Three are two rooms on the ground-floor, each a little more than 15 feet by 12 feet; and in the end house five lodging rooms, and in the centre three. There are gardens and separate yards; and the whole block is flagged round, securing to the occupants a pleasant and independent promenade. The houses have been transferred by the committee on a deposit of 32*l.* 13s., the balance being paid by taking out shares in the Building Society. The interest of the deposit at 5 per cent., compounded half-yearly, will be 28*l.* 4s. 6d.; and adding to this 7*l.* as the cost of the mortgage and transfer, the total sum actually out of pocket will be 67*l.* 17s. 6d., the amount paid for the shares being no more than the occupiers would really pay for rent.

SCULPTURE FOR TOWER OF ST. MARY MAGDALEN, TAUNTON.—Some sculpture is being executed by Mr. R. L. Boulton, of Worcester, for the tower of the church of St. Mary Magdalen, Taunton, which has been three years in building, under the supervision of Mr. Scott and Mr. Ferrey. As described by a Worcester contemporary, there are eleven figures, the majority of them complete. Three figures are allotted for the south front, facing the churchyard; the principal being, of course, Mary Magdalen, supported, on either side, by St. Andrew (the patron saint of the diocese), and St. James; the figures being life-size. On the west front are to be statues of the four Evangelists, about 4 feet high, and St. Peter and St. Paul life-size. Altogether there will be seven life-sized figures,—those already mentioned, and St. George and St. Michael.

THE NEW BUILDING FOR THE COVENTRY SCHOOL OF ART.—The chief stone of the new school in Ford-street has been laid. The building will be of Gothic character, and constructed principally of brick, with facings and ornamental work of Bath stone, relieved with some carving and other enrichment. The roofs will be of steep pitch, and covered with ornamental slating and ironwork. The outline is broken by gables, dormers, chimneys, and other features; and the buildings will group with the adjoining schools of the Holy Trinity. On the ground floor of the main building, facing the street, will be an entrance-hall and staircase (leading to the exhibition-room on the upper floor); class-rooms for ribbon drafting and female students; private studio for the master, and rooms for the keeper. At the back part of the building will be an elementary class-room, 30 feet by 67 feet, lighted from the roof and by side windows; also painting and modelling rooms, lavatories for both sexes, cap and cloak rooms. On the upper floor (of the front building) will be a room for the exhibition of pictures, lighted from the roof, and 50 feet by 20 feet. Adjoining is a room, about 30 feet by 16 feet, which will be used as a library, and for the committee meetings and general purposes.

RESULTS OF BREATHING A POLLUTED ATMOSPHERE.—The Rev. H. Housman, in a letter to the *Wolverhampton Chronicle*, makes the following statement:—"At the lower end of Canal-street there is a well-known row of houses, situate considerably below the level of the street, locally (and not inappropriately) called 'The Hole.' In front of these dwellings there is a drain, which sometimes carries the filth of this very filthy part of the town into the fields below the canal, and sometimes carries it into the interior of these habitations, in one of which it has been known to rise to the height of a yard. As might be expected, the stench which issues through the grating of this sewer is at times beyond all expression abominable. Pressed by such urgent invitations, sickness and death are frequent visitors in these houses. This week the father of one of the families living here died from typhoid fever. Just eight weeks ago his youngest child was buried, after a gradual wasting away, evidently unable to support life in an atmosphere of such pollution; and another of the children was carried off by the small-pox, which broke out in the house not long ago."

THE JOURNEYMEN BAKERS' GRIEVANCE.—The report of Mr. Tremenheere, who was appointed by the Home Secretary to investigate this subject, states that the case of the journeymen has not been at all overdrawn; but he does not seem to be very sanguine as to the possibility of meeting their grievances by any legislative enactment. The inspection of bakehouses, however, he conceives ought to be seen to; and the Act as to the adulteration of food more strictly enforced as regards bread. Youths under eighteen, he considers, should not be allowed to work in a bakehouse later than nine p.m. nor earlier than five a.m.; but for a real remedy, both for the private and the public grievances as to bread-baking, he is inclined rather to look to an improvement in the art of manufacturing bread than to Parliamentary interference; and he mentions with approbation several mechanical processes lately applied to this manufacture, especially Dr. Dauglish's new system of "aërated bread" baking. The account Mr. Tremenheere gives of the filth connected with the present system is horrific; and, could the metropolitan public be duly impressed with it, the grievances, he thinks, would amend themselves; inasmuch as home-made bread would be something like the rule and bakehouse bread the exception. Many of the master-bakers much desire amendment as well as the men; but a system of underselling to supply the poor has led to much of the evil complained of.

TROUBLING BUILDERS.—A correspondent writes:—"The tenders for the repairs and alterations at Thruxted Farm House, Chartham, were as follows:—Mr. H. Wilson (Canterbury), 430*l.*; Mr. A. Foreman (Chartham), 398*l.*; Mr. Whiting, (Ospringe), 397*l.*; Messrs. Gasken & Godden (Canterbury), 396*l.*; Messrs. White & Epps (Chilham), 382*l.* 10s.; Mr. S. Shrubsole (Faversham), 325*l.* Mr. Foreman has the contract, and great dissatisfaction is felt that parties should be put to the trouble to get out estimates for the purpose of furnishing information to intending builders, &c.; as it will be seen by the above figures that there were four estimates lower than the one taken."

ALBERT MEMORIALS.—On the melancholy intelligence reaching the colony of New South Wales of the demise of His Royal Highness Prince Albert, says the *Sydney Empire*, a movement was set on foot to collect subscriptions to erect a fitting tribute to the memory of the illustrious Prince. The first published list of subscriptions amounts, in the gross, to upwards of 1,000*l.* The subscriptions were limited to one guinea each; and the amount already subscribed is made up by a large number of very small contributions. It has not been decided what form the memorial will take.——The committee appointed by the subscribers to the Aberdeen memorial have, as already announced, intrusted the work to Baron Marochetti. The site chosen by the committee, with the approval of the sculptor, is the wooded bank at the north-west end of Union Bridge. The statue of the Prince is to be in bronze, in a sitting posture, and in the robes of the Order of the Thistle.

BIRMINGHAM ARCHÆOLOGICAL ASSOCIATION.—The members and friends of the Birmingham Archæological Association, to the number of fifty, have made an excursion to Kings Norton, Alvechurch, and Bromsgrove. Kings Norton was the first locality visited; and on the arrival of the party in that picturesque village the bells rang an enlivening peal. The church was examined, and its leading features described by Mr. Orford. The recumbent effigies in the chancel of Sir Richard and Lady Greves (*temp.* Charles I.), and the incised altar tomb in the north aisle, excited attention, as did also a slab in the same aisle, which recorded the murder of an inhabitant of the parish. The library in the school-house was next examined: the books, amounting to several hundreds, were the gift to the parish of Thomas Hall, vicar, who was ejected for nonconformity in 1662. The company next proceeded to Alvechurch, where the church, recently almost entirely re-erected, from the designs of Mr. Butterfield, was the object of attraction. The Ven. Archdeacon Sandford gave a brief account of the early history of the church. The drive from Alvechurch to Bromsgrove was speedily accomplished, and considerable amusement was excited by the manner in which the Rev. Dr. Collis described the various abominations which have just been swept away in Bromsgrove Church, now restored under the superintendence of Mr. Scott.

ANTIQUITIES NEAR MALTON.—At Norton, near Malton, a system of town drainage has just been commenced. The outfall was placed in the Derwent, a few days ago; and it is stated that, in excavating, the men were surprised to find, at the depth of 8 feet, a hard firm surface, resembling the best macadamized road, but so firmly cemented together, that for a considerable time no way could be cut through it. Eventually a section was exposed, which showed the road to be 15 inches in thickness, and to have been continued, apparently, across the river to the large camp at Malton, now generally regarded as the lost station, Derventio. This view of the site of the ford here is further strengthened by being immediately opposite the Prætorian gate of the Malton camp. The 8 feet of cutting was composed of alluvial deposit, which yielded several coins, varying in date from the time of Constantine to the third William. This would indicate that the ford had continued in use until the building of the Malton Bridge in the immediate vicinity, which is now shown not to be upon the site of the Roman ford, as has been generally supposed. In addition to coins, close upon the road were found various kinds of Roman pottery, antlers of deer, an iron spear-head with a horn handle, a wooden sandal, or shoe, with bronze fastenings (the wood crumbling on exposure), and a quantity of small horseshoes, differing from the horseshoe of the present time, in being much smaller and lighter, and being without the groove for the nail-heads. The road was exposed for some yards in a southward direction, towards a small camp opposite to the Malton one, which has recently been built upon.

ANOTHER TRIUMPHAL ARCH.—The *France* says that it has been decided to erect a monumental triumphal arch at the Barrière du Trône, to commemorate the Crimean and Italian campaigns. It is proposed to make it quite as high as that at the Arc de l'Étoile; and a wooden model is to be first erected on the spot, in order to judge of the effect. The necessary funds have already been voted by the Municipal Council.

AN INDIA-RUBBER OMNIBUS.—A Connecticut newspaper announces that a clever Yankee has invented an india-rubber omnibus, in which, although it may be packed full, there will always be extra room for a few more that may come. To the London General Omnibus Company, who seem to cling to the packing-box system so tenaciously that they are said to be purchasing the roomy rival Manchester omnibuses in order to get them out of the way of their own splendid vehicles, we commend the Yankee invention. To be serious, London never stood more in need of a new omnibus company than now. It must, however, be a powerful one: it will have a cunning rival to cope with, although the money power of a company who reap no dividends, and have expended all their capital in the vain attempt to purchase up the London streets, need be little dreaded.

FALL AT THE BRIGHTON PAVILION.—The promenaders in the Pavilion grounds were much alarmed last week by the fall of a large mass of stonework from the summit of the North Lodge. Falling as it did on the copper dome, it caused a noise like thunder. On examination, says the local *Herald*, it turned out that the stone finial of the copper dome had split in two. This finial, it seems, was supported by an iron rod, which ran through it from the copper dome; and, no doubt, the rusting of the iron has split the stonework, and so caused the fall. The southern half still remained; but, of course, in a very insecure state.

SOCIAL SCIENCE.—The arrangements for the inaugural Congress of the International Association for the Promotion of Social Science, which will be held in Brussels, from the 22nd to the 25th instant, are now, we understand, nearly completed; and, from the number of distinguished men in all parts of the Continent, as well as in this country, who have promised their attendance and support, there is every reason to believe that the meeting will be of a highly interesting and important nature. We may mention, for the guidance of many who will be attracted to Brussels at the time of this meeting, that every information may be obtained at the office of the National Association for the Promotion of Social Science, 3, Waterloo-place, Pall Mall.

GOLDSMITHS' HALL.—And now a few words regarding Goldsmiths' Hall. The site belonged to Sir Nicholas de Segrave, brother to the Bishop of London, in the reign of Edward II., 1316. By deed of sale, May 19, 1323, the land and premises were conveyed for ever to Sir William de Clift, clerk. In 1401, the company met "in their halle in Fosteres-lane." Sir Drue Bareyntyn, 1407, is supposed to have built the second hall, which appears to have had an armoury, gatehouse, granary, assay office, &c. In the hall was a silver-gilt statue of St. Dunstan, "broke and sold at the Reformation." In 1646, the hall became the Parliamentary meeting-house; and being almost destroyed in the Great Fire of 1666, the company were about removing to Jewin-street; but there being a house more suitable in Grub (now Milton) street, Cripplegate, they took it on a lease of twenty-one years, at a fine of 100*l*., and 60*l*. rent. The new hall was completed in 1669, and was of brick, surrounding a square court, paved, the front ornamented with stone corners wrought in rustic, and a large arched entrance, which exhibited a high pediment, supported on Doric columns, and open at the top, in which were the company's arms. The "hall," on the east side of the court, was a spacious and lofty apartment, paved with black and white marble. The court-room was richly wainscoted. (Brayley's "Londiniana.") The present structure, erected by Philip Hardwick, R.A., 1832-5, "is the most magnificent City hall, and the third erected for this company on the site." (Timbs.) But its situation is not well calculated to impress the beholder with its beauty. It is best seen from the back entrance to the General Post-office. We may add, that when the hall was inaugurated in the presence of the Duke of Wellington, on July 15, 1835, the prime warden stated that the building had been erected "without trenching on the charitable funds of the company: not one pension had been abridged: no charity was diminished: not one single petition for the relief of their poorer brethren was rejected."—*City Press.*

THE LATE MR. JAMES JOHN BERKLEY, ENGINEER.—We note with regret the death of Mr. James John Berkley, chief resident engineer of the Great Indian Peninsular Railway, at the early age of 42. It occurred at Sydenham, on the 25th ult. Mr. Berkley was the confidential secretary at one time of the late Robert Stephenson, by whom he was much regarded.

A TRACTION ENGINE IN LONDON.—An experiment illustrating the power of Bray's traction-engine for drawing loads almost impracticable to horses, along our public thoroughfares, took place on Friday night and Saturday morning, the 30th. A large wrought-iron girder, of the hog-back construction, 74 feet long, 5 feet 8 inches high in the centre, and weighing 20 tons, had to be removed from the works of Mr. H. Grissell, Eagle-wharf-road, New North-road, to the Manor-road, Dulwich, where it is to form part of a bridge for the London, Chatham, and Dover railway. The girder was safely removed to its destination.

ARTIFICIAL CORAL FOR GROTTOES AND OTHER ORNAMENTATIONS.—To two drams of vermilion add one ounce of resin, and melt them together. Have ready the branches or twigs peeled and dried, and paint them over with this mixture while hot. The twigs being covered, hold them over a gentle fire, turning them round till they are perfectly covered and smooth. White coral may also be made with white lead and resin; black coral with lampblack and resin. When irregular branches are required, the sprays of an old blackthorn are best adapted for the purpose; and for regular branches, the younger shoots of the elm tree are most suitable. Cinders, stones, or any other materials, may be dipped in the mixture, and made to assume the appearance of coral.

THE IRON AND MACHINE TRADES.—The exportation of iron in its various forms experienced some reduction last year; the total value of the iron and steel sent abroad having been 10,341,574*l*. against 12,154,997*l*. in 1860. There was an increase in pig from 974,065*l*. to 1,047,318*l*.; but bar, bolt, and rod iron declined from 2,385,871*l*. to 1,885,605*l*.; railroad iron, from 3,408 759*l*. to 2,903,357*l*.; wire, from 250,087*l*. to 207,317*l*.; wrought iron of all kinds, from 3,317,349*l*. to 2,868,923; and unwrought steel, from 986,228*l*. to 727,840*l*. The value of the machinery exported last year was never exceeded in any previous twelve months; steam-engines having figured for 1,243,467*l*., and other kinds of mechanical apparatus for 2,976,221; while in 1860 the totals were 1,238,333*l*. and 2,599,488*l*. respectively. In 1850, the value of the steam-engines exported was only 423,977*l*., and of general machinery 618,189*l*.

THE POLYTECHNIC.—Professor Pepper's lectures on the contents of the Great Exhibition are very interesting, and should be useful to many. These are given early on three evenings in the week and three mornings. Gold, silver, aluminium, and the coal-tar dyes were some of the subjects treated of when we were present. With reference to aluminium, the value of which was early recognized and urged in the *Builder*, he threw out an observation that touches church-building. It was to the effect that, recollecting the extreme lightness of this metal, if it were used for bells, towers to contain them might be of much less costly construction than is required for the bells now in use. The tone given out by aluminium when struck does not seem to us the right thing, but some slight alloy might perhaps serve to render it satisfactory. Messrs. Bell, Brothers, of Newcastle, are doing much to advance the manufacture of aluminium and aluminium bronze.

WELL-SINKING: A BRAVE ACT.—Some workmen in the employ of Mr. William Davis, the mayor of Haverfordwest, have been sinking a well in a field in Shut-street-lane. On finishing their work, one day lately, they had sunk to about 33 feet, and there was at the time about 7 feet or 8 feet of water. The same evening a girl, about ten years of age, fell into it. George Evans, a mason, got a thin rope hardly strong enough to hold the weight of a heavy man. One end of this he rapidly hitched round a log of wood; and, throwing the other end down, he descended. The child had sunk before he reached the water; and he was consequently obliged to dive to the bottom, about 7 feet or 8 feet. After awhile he found her, but his own strength was nearly exhausted. A number of men had by this time arrived, and they hauled up the rope rapidly, jerking poor Evans fearfully about, and terribly mangling his his hands. He held on, however, and brought the little girl safe to the surface. Evans will be unable to work for some weeks to come, and the case is one in which aid is richly merited.

OXFORD.—Fell's-buildings, in Christ Church College, are being pulled down to make room for fifty more undergraduates. The cost will be 21,000*l*. Mr. Simms is the builder; and Mr. Deane the architect. The range of buildings will be 36 feet in length, and in the Gothic style.

STATUES AND MEMORIALS.—A statue of King Louis of Bavaria has just been inaugurated at Munich.——The tomb in white marble, erected in one of the chapels of Notre Dame, to the memory of Mgr. Affre, killed at the barricades in June, 1848, is (says *Galignani*) now terminated. The archbishop is represented in his soutane, with the olive-branch in his hand, and falling mortally wounded.——The memorial to the late Mr. G. Cox, in the old burial-ground of St. James's parish, Bath, has just been completed by Mr. Holbrook, marble and stone mason, and uncovered. The design, furnished by Mr. C. J. Phipp, is Gothic, and is executed in Portland stone, with blue pennant columns, the capitals carved.

DEFECT IN NEW FORTIFICATIONS.—It is stated that the fort on the Mumbles Rock in Swansea Bay is not in a condition to withstand the concussion produced by the firing of the heavy ordnance. This defence has only been completed within the last eighteen months, and mounts five heavy guns. It is thought that the action of the waves has worked a number of caverns and hollows in the rock. A large rent has already appeared.——The *Dundee Courier* says that on account, as is alleged, of unsuitable mortar having been used in the construction of the mason-work of the fortifications at Broughty Castle, it has been found necessary to remove the coping from the western wall and the wall surrounding the hospital and other outhouses, for the purpose of re-laying it with new lime. On removing the copestones, the mortar, instead of being consolidated, is reported to have the appearance of dry earth or sand; and it is feared that other portions of the walls will require to be picked and pointed. But, if such be the case, will mere picking and pointing, however much they may hide the more serious defects, suffice for a fortification built with such mortar as that indicated?

RENAULT ON VENTILATION.—At a recent discussion at the Paris Academy of Medicine, Mr. Renault remarked that "his experience, derived from observation among animals, might be advantageously detailed. He wished to exhibit the influence which absence of due ventilation exerts on animals in a state of health and when diseased. The great mortality occurring amongst the horses of the French cavalry has been diminished by more than one-half by increasing the amount of air supplied to the stables, no other change in the management having occurred. At the end of the Italian war, 10,000 cavalry were left with no other stabling but mere temporary sheds; but the mortality was quite insignificant, and not a single case of glanders occurred. The French Government are now trying some experiments with respect to the results of the exposure of horses to even currents of air, some of the results having proved of a most favourable kind. As might be expected, the effects of the improved ventilation of stables has been still more fully exhibited with respect to sick and wounded horses." Of this Mr. Renault adduces numerous examples; the general result of the improvements being a great diminution of disease, a greater amount of curability, and a far less proportion of diseases of a grave character.

A LIVERPOOL HOTEL.—The Post-office Hotel, in Canning-place, is a colossal edifice, erected from a design by Messrs. Hay & Co., of Liverpool. The building is five stories high, measuring upwards of 60 feet from the ground to the parapet. This altitude, with a length of 85 feet, gives the whole external aspect, which is embellished in cement in the Italian style of architecture, a look reminding one of the buildings now being erected on the Boulevards in Paris. The doors are five in number: two of these lead to the bar; two to the sitting-rooms on the ground-floor; and the fifth opens into a hall, which, with its glimpse of the stairs, closely railed, gives an idea of a mansion rather than a house of business. The windows which light the bar are five in number, of large size, of polished plate glass in single sheets, and French Italian style of formation. These are protected on the outside by cast-iron guards. Every room in the house is a front one, and every floor has its water-closet, its cold and warm baths, &c. The kitchen is in a central part of the establishment, being situate on the second floor. In connexion with the kitchen is a circulating cistern, from which the house is supplied with water; and at the top is a cold-water cistern, containing nearly 1,000 gallons.